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CLASSIFIED returns to the Connecticut Railway Commission of the freight tonnage in the fiscal year 1910 of the New York, New Haven & Hartford, give figures bearing on Canadian reciprocity, which we have already analyzed in the case of the "border system,"—the Boston & Maine. The total tonnage of the New Haven for the year was 22,738,981. Of this—excluding lumber—hay, fruit and vegetables, poultry, game, and fish and "other products of agriculture," represent practically the only commodities which by any strain of imagination can be lowered in price to the producer by the Canadian agreement. They comprise together only 796,628 tons or about 3½ per cent. of the total tonnage. Lumber formed a little more than 5 per cent. But the benefits of cheaper lumber, on the one hand, and the value of the fast expiring lumber forests of northern New England, on the other, need only be stated as facts to be an argument for reciprocity. Moreover, of the lumber freight only about one-fifth originated on the New Haven system; and of the

agricultural products cited only 199,579 tons, or considerably less than 1 per cent. of the total tonnage. Contrasted with such relative trifles we find manufacturing merchandise and miscellaneous freight making up approximately 44 per cent. of the New Haven's total freight, and owing to its high rate obviously a much higher proportion of its freight receipts. Taking the New Haven and the Boston & Maine freight tonnage together, it is 45,554,509, of which nearly one-half is made up of manufactures and merchandise, a very large part of the remainder being commodities entirely exotic to New England and possibly 1 per cent. local farm products liable to be affected by lower prices due to reciprocity.

FOR many years there has been acute public agitation at New

Haven, Conn., over the subject of a new railway passenger station to replace the somewhat antiquated and outlived structure fronting on the harbor and about half a mile from the business center of the city. After years of delay the railway company became responsive to the public sentiment. It bought some additional land near the old station site, had the plans for a station drawn, planned also for a street railway subway under the track and for an outlying steamboat wharf—the whole to cost not less than \$3,000,000. But a better approach was needed and the whole plan was held up by exorbitant demands of land speculators and an alternative project of a smaller station proposed near the center of the city. The result has been a kind of referendum of an unofficial but expressive character, and which may be generalized thus: Do the residents of a city of 133,000 inhabitants prefer a minor station central or a major station at the municipal outskirts with marine annex? Or, stating the case a little differently, does accessibility alone in the matter of such an improvement outweigh all other conveniences? There has been, as we have said, no regular local referendum on the question. But, strangely enough and quite to the amazement of President Mellen, with whom the decision rested, there has been a decided preponderance of New Haven sentiment in favor of the central station, where the company already has the land—or most of it—and a big sum would be saved in construction. It is perhaps illogical to reason from New Haven to other cities. They differ in local conditions and in municipal temperament and taste. Yet the New Haven case is at least suggestive as a measure of popular feeling on the distance factor in location of a railway station—and, incidentally, is somewhat unique as an instance in these days where public approval is on the side of a railway economy. President Mellen has begun condemnation proceedings for the outskirt station, and appears to have decided pretty positively against the central station plan, on such grounds as undue congestion, difficulty of handling large crowds, and the smoke trouble. But the public agitation in the city for "centrality" and nearness as against other conveniences—and a much more esthetic station—has continued.

IN 1877, when the Erie and the Lake Shore & Michigan Southern were building south from the lakes into Pittsburgh territory and the Pittsburgh & Lake Erie was building north from Pittsburgh territory towards the lakes, an agreement was entered into whereby an east and west line was drawn about 70 miles north of Pittsburgh extending across the entire country and the business of the country from and to the Pittsburgh territory was partitioned out between the Erie and the Lake Shore. The Erie was given all the territory south of this line, the Lake Shore was given the territory north. With changes in conditions, and especially since the passage of the Mann-Elkins Act, which gives the shipper the right to prescribe, as between two competing carriers on any part of a route, which railway his shipment shall move over, this old agreement of 1877 has become unsatisfactory in working and impossible to enforce, in so far as the dividing line feature is concerned. A new agreement has been made between the New York Central Lines and the Erie, by which the restrictions both as to the New York Central traffic men compet-

ing for traffic south of this line and Erie traffic men competing for business north of the line, have been entirely removed. The Erie can today compete in Pittsburgh with the Lake Shore for traffic for Chicago, and the Lake Shore can compete with the Erie for traffic for the territory southwest of Pittsburgh. The Pittsburgh & Lake Erie, therefore, between Youngstown, Ohio (the southern terminus of the Erie) and Pittsburgh is in a certain sense the common agent of both the Erie and the Lake Shore. Sharon, Pa., is about 60 miles south of Lake Erie, and south of it about 20 miles is New Castle, while Youngstown lies southwest of Sharon. Now, the Sharon branch of the Erie, which runs from New Castle to Sharon, and forms the base of an equilateral triangle whose apex is Youngstown, connects the P. & L. E. at New Castle with the Lake Shore at Sharon. The P. & L. E. and the Lake Shore form the two legs of the triangle connecting at Youngstown. The Erie has agreed to give the P. & L. E. trackage rights over this Sharon branch, continuing, of course, to operate its own trains also over this branch. The advantages of this arrangement to the Pittsburgh & Lake Erie are obvious. It gets into that territory with its coke as well as with other business. The advantages to the Erie lie largely in the development of the business on this branch. Heretofore, for instance, the Erie could not take Chicago business off its own Sharon line. The present agreement was under consideration before negotiations began for the 99-year traffic agreement between the Western Maryland and the Pittsburgh & Lake Erie, in connection with which the Western Maryland is building its new line from Cumberland north to a connection with the P. & L. E. at Connellsville.

THE correspondent in Albany, whose letter we print in this issue, sets forth a sober fact of which we need frequently to remind ourselves—the fact that neglect or inefficiency in railway offices has been the cause of much of the success of the employees' brotherhoods. Possibly this is past history; but it suggests another fact, equally sobering, which must be looked upon as important both for the present and the future; the fact that in so far as the success of the brotherhoods has been in violation of economy, good practice or fair dealing, it needs to be combated and destroyed, and that the only way to accomplish this is by a reversal of the official tactics and policy (or want of policy) which have produced unhappy results in the past. Our correspondent is a trifle too severe on the superintendents, for many of them have worked hard to improve discipline, and, even where unsuccessful in this, they do not always whine about the oppressiveness of the brotherhoods. In his abundance of courtesy, he speaks of the employees' action as a demand for equitable wage scales; but the cold fact is that their leaders have sought the highest possible scale. Possibly railway managers have ignored equity also, making two wrongs; but the error of the labor leaders was the one that succeeded. Our correspondent says that the employees did not aim to secure contracts which would tend to encourage insubordination; they wanted a reign of laws, not of men. This statement, however, only serves to throw into strong light the ugly fact that in most of the cases where there has been trouble between a railway and its employees the "contract" was only a frame work; the real contest did not hinge on what should or should not go into a written contract; rather it was a measuring of the rival personal forces; the railway officers on one side and the brotherhood leaders on the other. The fact that for a long time all the prominent railway labor disputes have been settled in favor of the employees has been due not entirely to the increase in the cost of living or to the dangers of riding on a double-header, or in a four-wheel caboose, not by any means; but largely to the fact that on one side were expert negotiators, fully posted concerning every labor fact in the United States, and devoting their lives to this one object, while on the other was a superintendent or manager hampered by having constantly to refer to higher authority, by the demands

of numerous other important duties and (often) by insufficient experience in such strenuous fighting—or, in euphonious phrase, "diplomacy." Labor troubles will not be got rid of so long as this inequality continues. And labor troubles are not going to cure themselves, or die out for lack of fuel to feed their fires, so long as a considerable percentage of employees on trains are receiving 50 to 75 per cent. more pay than similar ability receives in other common employments.

A PROBLEM PESSIMISM WILL NOT SOLVE.

THE five-minute speech made by John Barton Payne, general counsel of the Chicago Great Western, at the annual dinner of the American Railway Engineering Association in Chicago, on March 22, was one of the sanest of recent utterances about the railway situation. Mr. Payne represented the Great Western in the western rate advance case. It might be expected that the result of that case would make him pessimistic. But he was formerly a judge. The judicial temper which nature gave him has been developed by experience. He is, therefore, able to be judicial even in defeat—a rare accomplishment. Surveying the field with an eye that can see the tendencies working to benefit as well as those working to harm the railways, he said, in substance:

"I do not think we should be disturbed by the phase of legal difficulties through which we are now passing. You know the history of the past in dealing with railway construction. We were simply leading the van of civilization through the West; and, now that civilization has settled down in some sort, difficulties which confronted railway construction and operation are exemplified by the 46 or more state commissions and the great commission of the United States. We must be wise enough to adjust ourselves to these conditions. After awhile, the United States commission, by the addition of power given by Congress and by the construction of the Constitution, which the Supreme Court of the United States must ultimately make, will assert and exercise the power of dominating rate-making and railway regulation to such an extent as to dwarf the power of the state commissions, and when we reach that condition we shall so have impressed ourselves upon the power of Congress and upon its wisdom that Congress will give to the railways of this country that power and encouragement which will enable the railways to take the place which the ways of the world have always taken and held. And the only word from the legal department of our road is that we shall be wise and patient, and that we shall not beat ourselves against the pricks, but deal with these conditions wisely, because it is a phase of civilization through which we must pass."

No man can forecast the future of American railways with an approach to accuracy who does not recognize the present as distinctly a period of transition. Until a comparatively few years ago each railway was an isolated unit. Its manager's two principal functions were to run his own road and to carry on war or negotiate with competing roads. Railway consolidation and an aroused and antagonistic public sentiment giving effect to itself in government regulation have created new conditions. The tendency of consolidation, of course, was to produce monopoly. Such a tendency, if not accompanied by, was bound to call forth, government regulation. Government regulation was bound to restrict the railway manager's freedom of action and his authority. Railway managers are human. Being human, it was inevitable they should resent and resist—often unreasonably—attempts to restrict their freedom of action and curtail their authority. Railway regulating authorities are human. Being human, it was inevitable they should seek constantly—often unreasonably—to extend their sphere of action and authority. Hence, to a large extent, the wide differences of opinion regarding government regulation and the struggles about it, resulting in the "phase of legal difficulties" which Mr. Payne mentioned.

Government regulation has come to stay. The sequel of the present controversy and struggle will be either a form of regulation satisfactory both to the public and the owners, managers and employees of the railways, or public ownership. Which it shall be will depend mainly on the railway men of America—including not merely the owners and the officers of the roads but their more than a million and a half of employees. There already has been much government regulating which is regrettable, and which should be undone. But there has been nothing done which is irremediable. Take, for example, the recent decisions of the Interstate Commerce Commission in the rate advance cases. They

are regarded by most railway officers and employees as unjust. But if they shall prompt managers and men to deal with the present situation as they ought to it may develop that this loss of a battle was the beginning of the winning of a campaign.

The general discussion of the question of rate advances had convinced the public that the railways were not rolling in wealth as it had thought. Public sentiment was in a condition of unstable equilibrium. If the commission had allowed any advances, the public would have said that the roads had got all that—or, perhaps, a little more than—they were entitled to receive. The unqualifiedly adverse decisions, if we may judge by the comments on them, both of individuals and the daily and periodical press, caused a feeling that the roads are being rather hardly dealt with. No other important decision of the commission was ever received by the public with so much doubt as to its justice or with so much sympathy for the roads. If the decisions had been favorable to the roads, employees probably would have been encouraged to make demands for further advances in wages which would have exceeded the resulting increases in earnings; and as the increased rates were asked for largely on the ground that they were needed to make it practicable to pay high wages, public sentiment would have sympathized with the employees. The commission having denied any increases in rates, both the owners and employees must look to increased efficiency for a higher return on their investment and for higher wages for their labor. The wages of labor constitute 62 per cent. of the total operating expenses of the railways. Obviously, therefore, the sort of increased efficiency which will tend most powerfully to increase the incomes of the security holder and of the worker is increase in the efficiency of labor. Surely there is enough sense and justice among the managers and the employees to work out a plan or plans by which increase in efficiency and a fair division of its fruits can be obtained. One does not have to accept the Munchausen estimates of efficiency engineers as to the possibilities of efficiency methods to see that by better co-operation between managers and men substantial improvements in operating results can be obtained.

The conditions created by the rate advance decisions are typical of all the conditions created by government regulation. These conditions make it of constantly more pressing importance for them, on the one hand, to deal judiciously with public sentiment, and, on the other, to labor harder to so operate the properties as, while meeting all the reasonable and many of the unreasonable demands of the public, to produce net earnings which will adequately reward and attract capital. Almost every one of the many struggles over the question of regulation in recent years has gone against the railways. No wonder, then, that railway officers in general have become temporarily the champion pessimists. But pessimism does not win victories. One of our most popular contemporary philosophers has defined an optimist as "a man who takes the lemons that are handed to him and makes lemonade out of them." It has been by years of exercise of that sort of optimism that hundreds of individual railway men have risen from switchmen, firemen and telegraph operators to general managers, vice-presidents and presidents. They dealt with conditions as they were, troubling themselves not over much with conditions as they wished them. They would have been untrue to themselves if they had done otherwise. They need to display the same spirit now—as many of them are doing—in dealing with the difficulties that confront the great enterprises with the duty and responsibility of whose management they have been charged. They must learn to make lemonade as well out of the lemons that are handed to their railways as out of those handed to themselves. If they do learn this the problem of government regulation will be satisfactorily solved. If they do not we shall go from one extreme of regulation to another until both the owners of the railways and the public will welcome government ownership as the only avenue of escape from the intolerable condition that must result from attempts at public management of private property.

RAILWAY HISTORY VERSUS STOCKHOLDERS' RIGHTS.

IN its recent finding against the raising of railway rates, the Interstate Commerce Commission harked back in one case 42 years ago for an argument. It cited the New York Central-Hudson River consolidation of 1869 and the carrying by the company of \$57,000,000 of capital stock unpaid for. This refers, or, at least, refers mainly, to the old 80 per cent. stock dividend of the times of Commodore Vanderbilt. It is true the commission does not cite the case very emphatically. But it does say that it is a bit of history to which it cannot entirely close its eyes. By the strongest of implication the commission says that in the fixing of new rates old annals and old acts of capitalization are to be taken into account, and, if the metaphor may be allowed, a kind of ancestral charge raised against original sin and levied on the present railway generation. In other words the stock waterings of the fathers are to be used to drown the profits of posterity.

In the last ethical and financial analysis it may be that the term "original sin" may be applied to the old time railway hydraulics. Yet, if so, it must be applied with qualification. Every error, even unto direct offense against the Decalogue, must be measured by its times. The Puritan fathers, stiff in their theology and, at many points, in their morals, did not hesitate to raise funds for public purposes by the lottery against which our generation aims the penal code. So with the capitalization of the railway. At its early and through its middle stages the capitalization of the railway was done with a free hand. There was, it is true, a charter limit. But the limit was technical and within it the ratios of cash and concrete values on the one hand to book and stock capitalization on the other were ignored both by authority and by public sentiment. Few railway commissions existed and where they did exist they were phantom bodies. Capitalization rested mainly on earning power, and large allowance was made not only in the mind of the public but of the investor for the initial risks of new railway enterprise—this in times, too, when the natural return on extremely conservative investment was 7 per cent., or higher. It would have been safer and better for posterity, no doubt, if stock capitalization had paid closer attention to plant and to the future rather than to mere earning power—a matter upon which New York Central's present stockholders in the shade of their recent reduction of dividend will agree. But free capitalization was elemental in the times. There was, for example, a New England railway company which, besides its 12 per cent. regular dividends, declared stock dividends over and over again in the decade 1860-70. And if the Interstate Commerce Commission is to refer to the New York Central's \$57,000,000, might it not also refer to that company's two-cent-a-mile charter restriction of the passenger rate which the public has enjoyed ever since?

Stress may also, in the line of economic reasonings, be laid on railway changes since the times of those successful stock waterings. One may cite justly the generally lowered passenger and everywhere lowered freight rates, the costly terminals, the higher standards of public necessity and convenience to which the railways have conformed, the offsets to original water in the increased valuation of plant, and the other and very large offsets represented by reorganizations which have snuffed out original capital paid in. But these are secondary to a final and vital consideration that lies at the root of the case.

That consideration is the transfer from an old generation to a second and third generation of stockholders. Even assuming that the first generation was guilty or, at least, careless and lacking in foresight, the later generations stand absolutely innocent of the past. There has been no breach of law in their own case or, for that matter, of their fathers before them. Their shares are legal, bought in the open market, or inherited under conditions where executors in distribution have set railway shares at market price against bonds, against realty or other forms of value not of a railway character—or they may hold such shares as trustees after repeated settlements of an estate. Again, in their utilitarian

relation are such stockholders to be set down on a plane lower than the outside investor? Is the railway a minor public beneficence as compared to the factory or the farm? Yet, apparently, from the viewpoint of the commission, the railway stockholder must be the victim. He must stand sponsor for the remote and ancestral act, shoulder the responsibility of \$57,000,000 injected into New York Central capital four decades ago, by parity of reasoning carry the sins of the Credit Mobilier scandal in the first Pacific roads or bear the burden of undue profits of a contractor in building an early pioneer line. That is the *reductio ad absurdum* to which historical responsibility for antique railway financing inexorably leads—as though the logical economic sequels of earlier misdoing in such instances as the Erie were not enough.

The reference of the commission to ancient capitalization of the New York Central would be unpleasant as a bit of unjust reasoning if limited to itself. But, unfortunately, it is but part of that greater visual defect of the public which sees the railway only from one side. It views it almost solely as a great chartered organization. Its mental vision pauses upon the outward expression in thousands of miles of track, great stations, its central office of huge structure, its functions as carrier of men and goods. Unseen or not seen at all in the background is the stockholder who is the real corporation with rights, so far as pertains to his *investment*, identical with those of the man who builds a factory or owns a shop. That analogy now so strangely confused cannot be too soon clarified. It will not be clarified by official allusion to original and far away acts for which a posterity of railway shareholders are as blameless as for the error in Eden.

Letters to the Editor.

GENESIS OF RAILWAY BROTHERHOODS.

ALBANY, March 11, 1911.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The communication published in your issue of February 7 wherein your correspondent administers a mild rebuke to the exponents of "efficiency methods" for their seeming disregard of the variable nature of the human factor is particularly interesting when viewed in connection with the circumstance that of all organizations for the conduct of business within the limits of the United States there are none that have paid so little attention to this same principle as the transportation companies and their managers. In the work of loading and transferring freight personality counts for something, in office work it counts for a little more; and in shop work it is of still greater value; but in the business of train operation it at present constitutes almost the entire problem. Constructors and mechanical engineers, aided that greater public strabismus which sees the railway corporation by cheap steel, have succeeded in at least partially solving their share of the problem connected with safe train operation, but the managers and operating officers who are directly responsible for the human factor, have left their part just as they found it twenty or more years ago—unsolved. The stock excuse advanced by operating officers for their failure to improve the quality of the human element, is, that they are and have been hampered in this direction by the malign influence of the labor organizations. But, it may be asked, who is responsible for the existence and power of these dangerous combinations? They did not leap forth full armed like Athene from the head of Zeus, any more than did "efficiency methods"; they are the result of conditions that it should have been somebody's business to note and inquire into, with the idea of forestalling so threatening a movement as labor combinations are generally alleged to be, by eliminating those conditions.

The forces that have operated to energize the railway labor union into life and activity are quite dissimilar from those that

have brought the trade unions into existence and sustained them in their activities. In the trades the forcing process resulting from the "closed shop," and long association during the formative period of youth with union journeymen which operates on the apprentice in such a way that he comes to regard his entrance into the union on becoming a journeyman as a natural and necessary step, both combine to add to the strength of trade unionism, and to furnish an explanation for it; but in railway operation neither of these conditions obtains.

Railway men were not compelled by the economic menace contained in the law of the closed shop, nor by an impulse arising from association to become unionized; but rather by circumstances wholly within the power of the railways to eliminate; desire for a more equitable wage scale and determination to nullify the petty tyrannies of under officers. And of these two factors the latter was the more powerful. It is this factor that has frequently produced a situation quite inexplicable from the viewpoint of the general public, who have often witnessed with astonishment that railway unions were more anxious and determined to secure the ratification of certain seemingly unimportant articles in their "agreements" than they were for increases in pay. These articles would probably be intended to protect them from the "snap judgments" of officers who would consider it prejudicial to discipline to reopen the case even when entirely convinced of their error, and to eliminate unnecessary hardships resulting from carelessness and inattention on the part of minor bosses.

To illustrate the extent to which the management's neglect of the human factor aided in the establishment of railway unions let me cite a case. Not many years ago the freight crews located at a certain terminal of one of our great trunk lines were called by two half grown boys, who instead of being required to keep in touch with the "run" of freight and to call men within a reasonable time of their being required for service, were permitted to simplify the matter by calling a certain number of crews at stated intervals whether they were required for immediate service or not; so that a man called at 9 p. m. would often remain about all night, and frequently would not be needed for service until late the following day. No one will deny that this was an unnecessary hardship, and could have been avoided if the caller's office had been conducted in a businesslike manner and with some thought of the welfare, to say nothing of the operating efficiency of the men; yet the practice remained in vogue until the labor unions on that particular road became strong enough to compel the management to agree that the men should be paid for every hour they were called and not put in service. Of course little overtime was paid, but the crews were not called until they were needed, which was the end desired.

It was not the aim of the railway labor unions to formulate "agreements" that would enable their members to escape from the control of their superiors, but with the instinctive desire for justice which seems to form part of the mental equipment of the average Anglo-Saxon they desired to make the subject a matter of law and not an affair of men; and it is to the fact that railway managers were not watchful enough nor acute enough to detect this tendency and forestall it that the railway labor unions owe their present vitality and energy. And the real problem that confronts the average railway management today is to direct this energy and vitality into channels where it will operate to the mutual advantage of the public, the railways, and the men. To think of turning back is mere Bourbonism, and to speak of "handling men" is an anachronism. Officers are compelled by the very force of circumstances to deal with men, and as a consequence to study them, and to come to know their weaknesses and their strength. With this study of the human factors will come a better appreciation of the conditions under which that factor is required to operate, and when they have reached that point railway managers have taken the first long step towards the solution of all the operating problems which involve the element of personality.

ONE OF THE COGS.

TRAFFIC AND OPERATION OF THE VIRGINIAN RAILWAY.

BY GEORGE L. FOWLER,
Associate Editor, *Railway Age Gazette*.

An article was published in the *Railroad Gazette* of March 15, 1907, dealing with the location, construction and adopted standards of the Tidewater and the Deepwater railways, now combined and operated as the Virginian Railway. At that time the road was under construction, the arrangements of the Norfolk terminal were up for consideration, but had not even reached the paper stage of its development, and the energies of the officers were being directed solely towards the completion of the grading, the erection of the viaducts and the laying of the rails. Attention was, however, called to the very substantial manner in which all work was being done, and the high grade of engineering that was manifested in the location and construction.

Briefly summarized, the road started from Deepwater on the Kanawha river, and ran south through an exceedingly rough and totally undeveloped country for 96 miles to Princeton, near the summit of Stone Ridge mountain. From Princeton there is a pusher grade of 0.6 per cent. for 2 miles and then there is a run down the eastern slope of the mountain to the valley of the New river, where the crossing is made over the spectacular piece of location described in the previous article and of which the high New river bridge and viaduct form a part. Here, east of Glen Lyn, after following the New river for 30 miles, the climb of the Alleghenies begins. This is done with a maximum grade of 0.6 per cent., which involves a pusher grade 8.5 miles long. The run down the eastern slope of the Alleghenies is on a 1.5 per cent. grade, beyond which is the valley between the Alleghenies and the Blue Ridge, then through a gap in the Blue Ridge and across the coast plains of Virginia to the sea, with a maximum grade of 0.2 per cent. against eastbound traffic. It is quite apparent what this meant in the way of heavy work, even in so easy a country as that through which the road passes, in its last hundred miles to the coast.

It was laid out essentially as a coal road, without any intention of attempting to develop a large passenger traffic, though its scenic attractions are very great; but with the expectation that mines would be opened along its route to such an extent and of sufficient capacity to supply a paying traffic to the line, which, when handled with proper terminal facilities, would put the property on a firm financial basis. With a low-grade line of the character described, the calculations were to run trains averaging 80 cars, each of 50 tons capacity with a possible 10 per cent. overload, so that the net tonnage from Princeton to the sea would be about 4,000 tons of paying load.

To care for this at Norfolk, a terminal was built capable of handling 30 car loads an hour into the holds of vessels alongside, and to keep this up day in and day out, if it were required. This gave a terminal facility of 15,000 tons for 10 hours' work, a condition that has been met in the one pier already built, the details of which will be given in a separate article. The main points to be considered here are the development of traffic that has followed the construction of the road, the growth of the towns along the route, the mines that have been opened and the possibilities of future expansion, each of which has a bearing in emphasizing the soundness of the judgment that financed the road and stood by the enterprise to its completion.

The road could not be opened for traffic until the Norfolk terminal was completed, and this had its first efficiency test in April, 1909, so that it is only fair to assume the first month of real operation to have been that of July, 1909. At that time there were three mines in operation along the line of the road; their daily output was about 2,350 tons, and, with them, the total tonnage handled by the road was 85,661 tons. Since that time (up to December 1, 1910) the number of operations on the line of the road has increased to 14, with the result that

the tonnage hauled during November, 1910, was 240,909 tons, which was an increase of 106.95 per cent. as compared with the same month of the previous year. This gave an increase of 89 per cent. in gross revenue and of 264 per cent. in net revenue for that month.

In handling this traffic no changes have been made from the plan originally laid down. With the undeveloped resources that will be seen to exist, coupled with the high character of the product, it is evident that there is likely to be a western movement as well as the one towards the seaboard, and that there should be such a movement has been assumed in the calculations from the first; also, that this movement should reach the lake ports.

These lake ports, such as Cleveland, Sandusky, Conneaut and Ashtabula, are equipped with facilities for rapidly handling heavy bulk cargoes. There are rapid unloaders for the ore and car dumping machines for coaling and loading vessels. Where the car dumping machines are located, the gondola car is the one that is used. The hopper bottom car has been practically discarded for this trade. For eastern and tidewater delivery, on the other hand, the hopper bottom car is in use. It is pushed up a high trestle, dumps its load into a pocket or chute and returns to grade by gravity. To meet these two methods of operation, two types of cars are required. From the operating and maintenance standpoints the handling of two classes of equipment is objectionable, and it was, therefore, decided by the management of the Virginian Railway that it would have but one. Furthermore, for ordinary purposes where but few cars are handled the hopper bottom car serves its purpose well, but where it is to be handled rapidly and in large numbers it often gives trouble in spotting accurately over a chute and quite frequently fails to clear when dumped, especially if the load has been wet and afterwards frozen. Taking this in connection with the methods of handling lading on the lakes, the hopper-bottom car was practically debarred, and the gondola was the one adopted. It had to be adapted for use in a car-dumping machine, and such a machine had to be installed for taking care of the tidewater traffic. As to how this has been done will appear later from the description of the plant at Sewell's Point. Briefly, the tidewater traffic from the West Virginia mines is handled exclusively in flat bottom gondola cars, delivered to a Hewlett car dumping machine. These cars were described in the *Railway Age Gazette* of June 12, 1908, and their service performance will be taken up elsewhere. The locomotives used for hauling this traffic are of the mikado (2-8-2) type with some Mallets (2-6-6-0) for pushing service. The general dimensions of these engines are as follows:

	Mikado.	Mallet.
Cylinder, diameter, H. P.....	24 in.	24 in.
Cylinder, diameter, L. P.....	.....	36 in.
Piston stroke	32 in.	32 in.
Steam pressure	190 lbs.	210 lbs.
Heating surface, tubes.....	4,277 sq. ft.	5,377 sq. ft.
Heating surface, firebox.....	164 sq. ft.	234 sq. ft.
Heating surface, arch tubes.....	25 sq. ft.	30 sq. ft.
Heating surface, total.....	4,466 sq. ft.	5,641 sq. ft.
Grate area	51 sq. ft.	78 sq. ft.
Driving wheels, diameter.....	56 in.	56 in.
Weight on drivers.....	207,450 lbs.	356,780 lbs.
Weight on truck (front).....	20,850 lbs.	31,540 lbs.
Weight on truck (rear).....	25,700 lbs.	.....
Weight, total	254,000 lbs.	388,320 lbs.
Tractive effort	53,157 lbs.	92,000 lbs.

Of these engines it has been found that the mikado is the most satisfactory for road service. It can haul 40 cars of 50 tons capacity each at an average speed of 15 miles an hour on the mountain grades. On the more level sections of eastern Virginia it can handle 80 cars and give no trouble with steaming.

It was thought that Mallet engines might be used for road service, but they have not been found to be as well adapted for this as was expected, especially because of their inability to drift, so that they have been confined to pusher work. It is in this service that they are needed the most. All of the tonnage offered can be handled with comparative ease after it has been delivered in the Princeton yard. It is the assembling

of the loads and getting them over the hills that now occupies the attention of the traffic department. Elmore, at the foot of the summit north of Princeton, is the throat of the road, and it is toward preventing congestion and delay here that the energies of the officers are directed. On this hill, from Elmore to Clark's Gap, the Mallets are doing their most efficient work.

While the coal traffic is the main reliance of the road, and will form the basis of its prosperity, the construction of a railway through a new and hitherto untouched territory cannot fail to bring out other latent possibilities. So, in the district of southern Virginia, through which the road passes, new towns have sprung into existence. Altavista, at the crossing of the Southern Railway, is a case in point. Two years ago the site of the town was a corn field. Today it has a population of 1,400; the streets have asphalt pavements and there is a good hotel that cost \$25,000. Victoria, a division terminal 120 miles west of Norfolk, is a thriving village of 1,200 inhabitants that has sprung from the same cornfield condition. Princeton, the headquarters of the mechanical department, is an old town, the county seat of Mercer county, but the location of the yards and shops here has given it an onward impetus until now it has a population of 6,000. The same holds true for other places, one of which shipped 2,000,000 lbs. of tobacco last year where none had originated before. These indications of what is following in the train of the operation of the road are but repeating the history of other pioneer enterprises. Still, it is not on this growth that the prosperity of the road depends, although it may prove a strong contributing element.

The possibilities of the future must be judged by studying the coal fields. The road starts, as we have seen at Deepwater, W. Va., and runs for 87 miles through one of the richest coal countries of the world, rich not only in the thickness of the beds but in the quality of the coal. For 20 miles south of Deepwater station, the road runs through the Kanawha gas and splint coals, and then passes into the New River and Pocahontas measures. It is of an exceedingly uniform character and is found in beds ranging from 4 ft. 3 in. to 6 ft. thick. In some of these thicker veins there is only a trace of bone, while in others it is nearly a foot thick. The average of five analyses taken haphazard from one of these mines is as follows:

Moisture .....	.88 per cent.
Volatile matter	18.72 "
Fixed carbon	77.26 "
Ash	3.31 "
Sulphur .....	.657 "
British thermal units.....	15366

In these analyses the ranges are for:

Volatile matter, from.....	17.93 to 19.86 per cent.
Fixed carbon, from.....	76.18 to 77.97 "
Ash from.....	2.98 to 3.76 "

There is thus a variation of less than 2 per cent. for any of these fundamentals.

Some other mines will show even better results, the fixed carbon running over 78 per cent., the volatile matter about 16 per cent., the ash about 4.75 per cent., the sulphur .75 per cent., and the moisture .5 per cent., developing nearly 15,000 B. t. u. This coal is equal to the best of the Pocahontas, which will average 17.27 per cent. volatile matter, 77.77 per cent. fixed carbon, and 4.71 per cent. ash.

With the steaming qualities of the Pocahontas and New river coals, so well known, the market for the output of the fresh field has grown naturally and rapidly to the figures given. In addition to the 70 miles of this coal territory traversed by the main line, there are already about 37 miles of branches, so that, all told, the road has nearly 120 miles of track, every inch of which is in position to originate traffic. Besides this, spurs have been run out to old workings to the east, so that in the near future two groups of mines of 13 each, will be added to those contributing to the traffic; it is expected that about 40 carloads a day will be received from each of these groups.

The Kanawha gas coal is also of a high grade, an average analysis being about as follows:

Moisture	0.47 per cent.
Volatile matter	35.41 "
Fixed carbon	58.47 "
Ash	5.65 "
Phosphorus	0.004 "
Sulphur	1.06 "
British thermal units	14650

As for the quantities in sight immediately tributary to the railway, it is only possible to make a roughly approximate estimate. This area of the New river coal field may be placed at about 1,000 sq. miles, and of the Pocahontas at about 250 sq. miles, while the probable contained tonnage of New river would be about 3,000,000,000 tons, and of the Pocahontas 1,000,000,000 tons. It is in assisting in the development of this property and then in the transportation of it to market, that the owners of the road are counting, for the road itself owns no coal land.

In considering this as a mining proposition the topography of the West Virginia mountains must be taken into account. It is to be borne in mind that they are very steep, that they are formed of a series of narrow ridges and deep ravines ("hollows" in the vernacular). The coal seams are generally outcropping and come to the surface far up the sides of the mountains, so that drift mining is the almost universal practice. The coal, when brought to the surface, is easily sent down to the tippie and loaded into the cars, very little sorting being required, though a rigid inspection is maintained for the removal of the bone, which is a low grade coal containing about 32 per cent. of ash and occurs in thin veins in the best of the Pocahontas mines. The mining and delivery of this coal to the tipples is, therefore, comparatively easy, and there is little danger from gas.

In handling the traffic the Virginian Railway follows closely the methods of the older roads of the district. In the Pocahontas field the original rating of the operations for car distribution was based on the number of coke ovens at work. But no such basis was possible on the Deepwater division of the Virginian, because the mines were newly opened and there were no ovens. Up to the present the equipment of the road, consisting of 3,000 gondolas and 1,000 hopper bottom cars, has been quite sufficient to take care of all of the traffic offered and to give to each mine operator as many cars as he asked for. But while the emergency has not yet arisen, it is possible that this condition of affairs may not always obtain, and it is to guard against any contingency in the way of a shortage that a provisional arrangement has been made, the fairness of which the mine owners have recognized.

The output of each mine for the month of its maximum was taken, and an average struck from this of the number of cars loaded per day. The number of cars owned by the road was then divided by the total of these averages of cars loaded, and each individual average multiplied by the quotient, the result of which gave the number of cars that each owner was entitled to have under load, and he can draw on the supply until his quota is reached. In fact, it is not until this is exceeded by a hundred or more cars that it has been found to be necessary to put an embargo on empty car deliveries to any one mine.

The delivery of empties and the removal of the loads is done, for the most part at night. The loads are hauled out on the main line in strings of from 10 to 20 cars, and taken down as far as Elmore, about 30 miles from Princeton, where they are brought together in trains of about 45 cars and sent up to Clark's Gap with three locomotives. At Princeton the assembled cars are run in on an eastbound receiving yard, where they are weighed and distributed over a hump into an eastbound classification yard. Here they are made up in trains of from 60 to 80 cars each, pushed up over the summit and hauled to Sewell's Point with one engine as already described.

It must not be understood from this that the road is com-

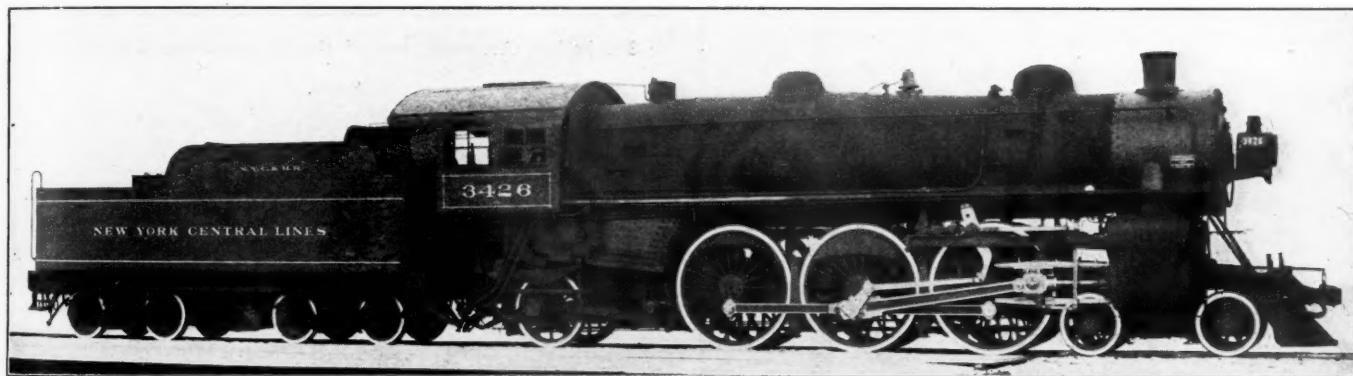
pleted, that all things are done and that "finished" can be written on all of the original plans. The yards and passing sidings are still in process of development, the stations are not all built, and the road is not completely ballasted with rock, though three crushers are kept at work. Some of the cuts are still a little soft and the fills have not yet done with their settling. But all of these things are receiving attention according to the pressure of their demands. Roundhouses of approved design are being erected, some of the details of which will be dealt with elsewhere, and yard work is being pushed so as to keep abreast of the demands of the traffic. At Princeton the main assembling yard has been laid out with a full appreciation of the demands of a heavy traffic, but all of the rails are not yet down or the grading done. The plans call for a yard that, when finished, will have a length of about two miles and a capacity for 1,400 cars. And when it is considered that this yard will be straight from end to end, and that the location was secured in a country of steep ridges and narrow, crooked valleys, the skill of the engineers who laid it out may be appreciated. The yard lies on one side of the main line, so that it is not crossed by either the entering or leaving traffic.

So at Sewell's Point, the yard there is called upon to work under peculiar conditions. The mines are not pooled, and each has its own selling agent. These agents order ships to the pier, to carry away the particular carloads that their mines have shipped, so that these cars are first held back in the classification yard, where they are lined up according to owners, of which

HEAVY PACIFIC TYPE LOCOMOTIVES; NEW YORK CENTRAL LINES.

The Pacific type locomotive has for the past few years been the object of considerable study by the officers of the New York Central Lines, who have regarded it as the type of locomotive best suited to meet the demands of modern heavy through passenger traffic. In the early part of 1907 the American Locomotive Company built several heavy passenger locomotives of this type for service on the Lake Shore & Michigan Southern. These engines were at that time the heaviest passenger locomotives in actual service, and were so successful in the operation of heavy trains that thereafter they became the standard heavy passenger locomotives for the New York Central Lines. Although these locomotives met the conditions in 1907, it has since been found necessary to seek for still greater power, to meet the requirements of improved modern passenger service. As the boilers of the previous locomotives had nearly reached the maximum size permitted on engines of this type, the use of superheated steam was considered as a possible means of increasing the boiler capacity.

In May and October of 1910, tests of a Pacific type superheater locomotive, which are described elsewhere in this issue, were made on the Lake Shore & Michigan Southern. The results of these tests were such that fire-tube superheaters of a little greater capacity than generally used were decided on for an order of 20 Pacific type locomotives recently built by the



Pacific Type Superheater Passenger Locomotive; New York Central Lines.

there are seventeen. They cannot be moved from this point until the vessel that is to receive their contents is actually docked. They are, then, pushed over the hump and dropped down into the Barney yard, whence they are run by gravity to the dump, as will be described elsewhere.

Again in the case of the shops. A clear-cut definite plan of construction has been devised, and this is being followed in the construction as it progresses, but up to the present the whole is far from complete.

And finally the work of organization is in the transition stage of development. It has been necessary to start with a long line of rails and no traffic, and keep building up an organization to take care of an exceedingly rapid growth, and this, too, without the possibility of offering any great inducement to skilled men to come from outside. The country in the mountains is rough, might even be called uncivilized, it contains none of the comforts and conveniences to which men living in the older communities are accustomed, and these disadvantages could not fail to have an influence in keeping out men who were obliged to consider their families. Even the inducement of a probable promotion to passenger service could not be held out to the train men. It has, therefore, been necessary for the management to build up its organization out of its own raw material and to pick out that material, hew it into shape and place it with great rapidity in order to keep pace with a traffic that more than doubled in the last twelve of its first eighteen months of existence.

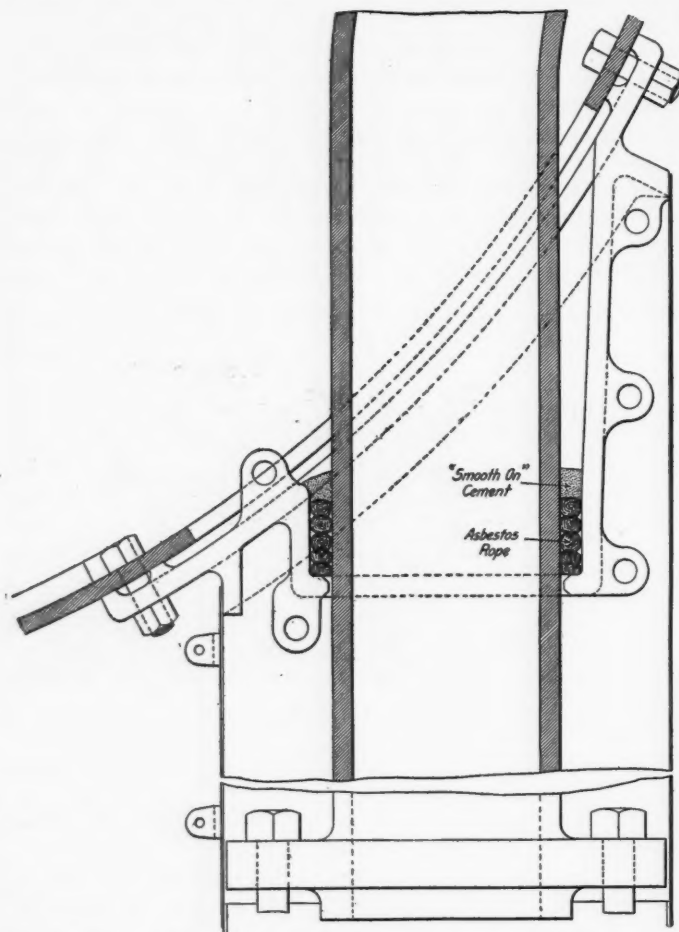
American Locomotive Company. The general design of these engines presents no unusual features, except in the application of the steam pipe, the design of the cylinders, and a new type of Walschaert valve gear crosshead and guide.

The superheater is of the top header type, and is made of 32 sections. The steam pipes pass from the header through the side of the smoke-box directly to the steam chest, as shown on the accompanying illustration. This arrangement was used in order to obtain a maximum free area for the waste gases under the diaphragm. It provides an open smoke-box, with easy access to the superheater connections and also greatly simplifies the cylinder casting, allowing the walls of the cylinder to be made stronger and more uniform in thickness. The cores are larger and the whole casting is much easier made. The cylinder dimensions were changed to 23½ in. x 26 in. from 22 in. x 28 in., used on the earlier locomotives, as the tests, above mentioned, demonstrated that better results were obtained with these dimensions. By the use of the Walschaert valve gear crosshead and guide, the crosshead and valve are sure of absolute alignment, and are convenient for inspection and repairs. The guide is secured to the valve head and is centered by the bore of the valve chamber. The other details of the valve gear, however, are substantially the same as on the original design.

The builder's latest type of radial outside bearing trailing truck with single bar frame construction, substantially the same as applied to many recent Pacific type engines, is used because

of its lightness and accessibility for repairs. The double bar frame construction was used on the previous engines. Another feature, which while common abroad, is a novelty in American practice, is the use of a single U shaped heavy pressed steel plate bumper instead of the conventional steel casting or heavy wooden beam with plate backing.

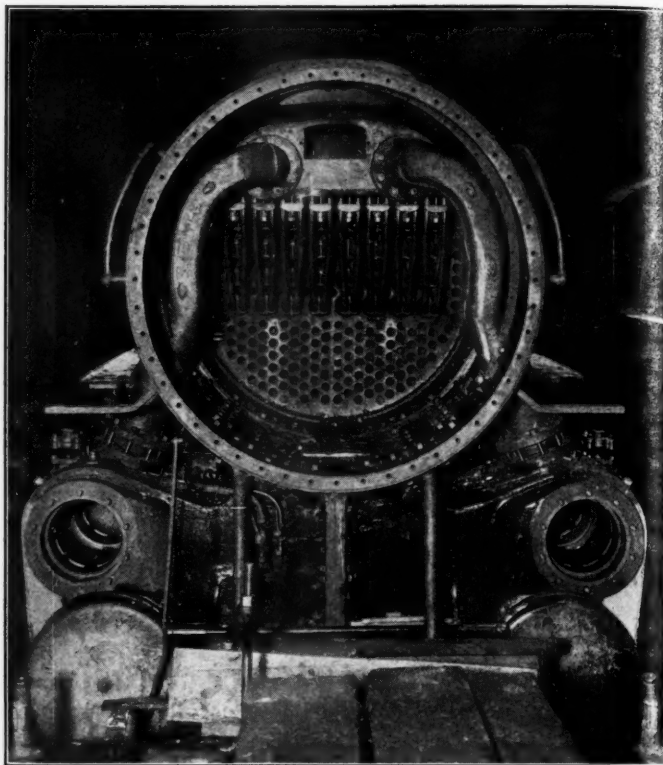
In the same order were 60 Pacific type locomotives for fast freight service, 10 of which were equipped with superheaters. They are of the same general design, the only changes being those necessary to adapt them to their special service. The drivers were decreased 10 in. in diameter, and the cylinders were made larger, increasing the tractive effort. The size of these orders shows the faith the railway has in the ability of this type of locomotive to handle heavy passenger and fast freight service. The following general dimensions and ratios are given for all three classes of locomotives, and by comparing them with



Steam Pipe Connection on Superheater Locomotive; New York Central Lines.

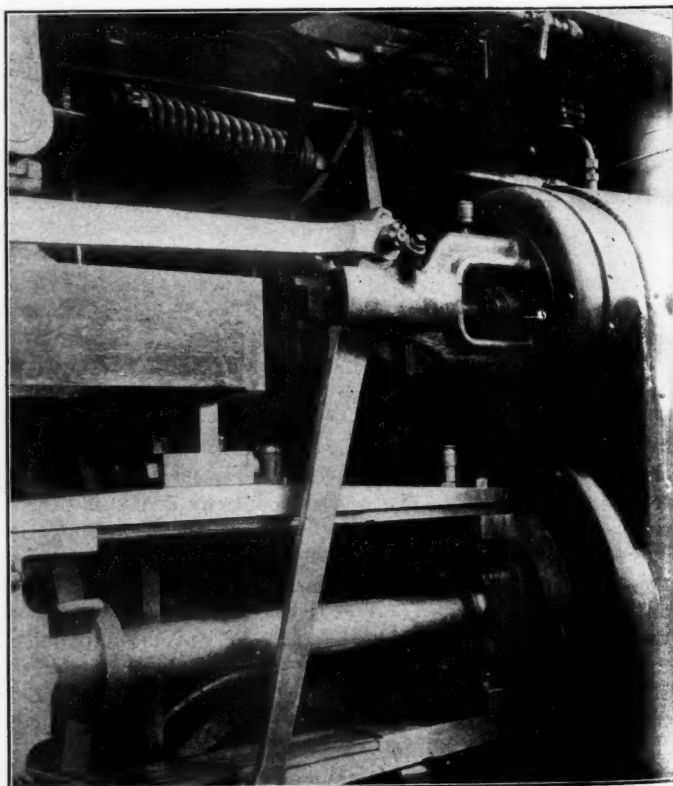
those given in the article on Tests on a Pacific Type Locomotive, contained in this issue, the development of this type of locomotive in the past four years may be noted.

General Data.			
Type	4-6-2	4-6-2	4-6-2
Service	Pass.	Freight	Freight
Fuel	Bit. coal	Bit. coal	Bit. coal
Tractive effort, lbs.	30,900	36,890	38,970
Wt. in working order, lbs.	269,000	263,000	266,000
Wt. on drivers, lbs.	171,500	172,000	170,700
Wt. of engine and tender, lbs.	424,000	410,000	413,050
Wheel base, driving	14 ft.	12 ft. 6 in.	12 ft. 6 in.
Wheel base, total	36 ft. 6 in.	33 ft. 7 in.	33 ft. 7 in.
Wheel base, engine and tender	67 ft. 11 in.	66 ft. 3 1/4 in.	66 ft. 3 1/4 in.
Ratios.			
Total wt. ÷ tractive eff.	8.71	7.13	6.83
Wt. on driv. ÷ tractive eff.	5.55	4.66	4.38
Tractive eff. × diam. driv. ÷ htg. surf.	712	546	713
Tractive eff. × diam. driv. ÷ equiv. htg. surf.*	535	.....	545
Total htg. surf. ÷ grate area	60.6	83.5	66.9
Total equiv. htg. surf.* ÷ grate area	80.6	.....	87.3



Smoke-box Arrangement of the Superheater Locomotive.

Ratios.			
Firebox htg. surf. ÷ total htg. surf., per cent.	5.96	4.38	5.36
Firebox htg. surf. ÷ total equiv. htg. surf.* per cent.	4.48	.....	4.09
Wt. on driv. ÷ total htg. surf.	50.1	37	45.3
Wt. on driv. ÷ total equiv. htg. surf.*	37.6	.....	34.6
Total wt. ÷ total htg. surf.	78.5	56.5	70.6
Total wt. ÷ total equiv. htg. surf.*	59.0	.....	54.0
Volume both cyl., cu. ft.	13.05	16.0	13.6
Total htg. surf. ÷ vol. cyl.	262	291	277
Total equiv. htg. surf.* ÷ vol. cyl.	349	.....	363
Grate area ÷ vol. cyl.	4.33	3.53	4.15



Walschaert Valve Gear Crosshead and Guide.

RAILWAY RATE MAKING IN THE SOUTH.*

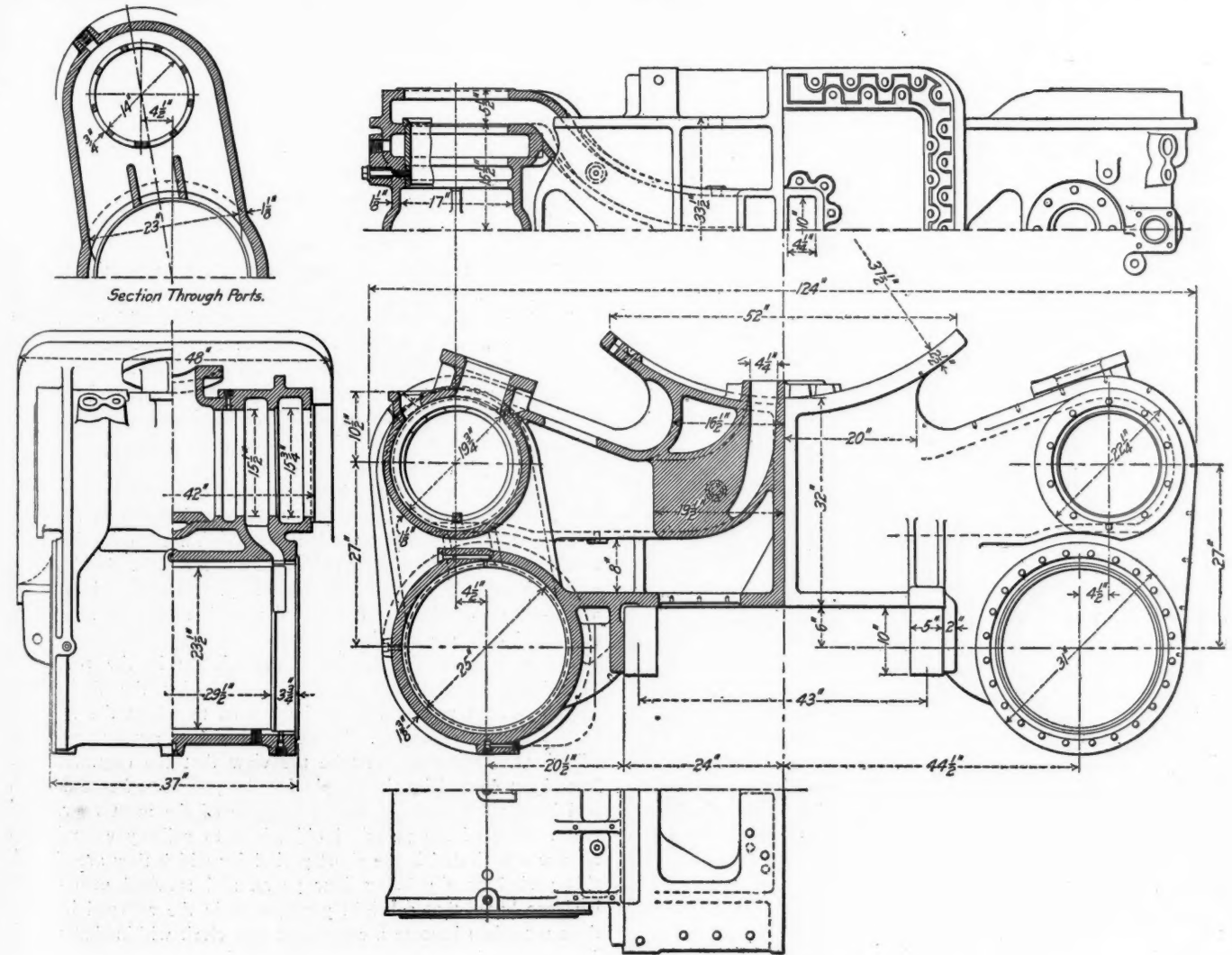
The South is divided into two main groups for the purpose of rate making, known as the Southeastern Freight Association territory and the Southwestern territory. The first embraces all that territory lying south of the Ohio to the Gulf, and east of the Mississippi to the Atlantic Ocean. The second comprises Oklahoma, Louisiana, Arkansas and Texas. The rates to the Southeastern Territory were originally made to South Atlantic and Gulf Ports, first by sailing vessel, steamships latterly coming into use from North Atlantic Manufacturing points.

First among the factors that have influenced rates in the Southeastern states must be placed the physical geography of that section, and the consequent influence of water transportation, the eastern and southern boundaries of this section being the Atlantic Ocean and the Gulf of Mexico, the western boundary the Mississippi River, the northern boundary from the Atlantic ocean to Cairo, Ill., by way of Ohio and Potomac rivers. Numerous streams leading south from the Ohio and north from the Gulf, made possible a certain amount of water transportation to the interior. When the railways were first built, they found certain commercial and transportation conditions already established, which it was impossible to disregard. As a result of these conditions, there are several classes of what are known as basing points in the South. First, there are the seaports from Norfolk to New Orleans, through which the products of the interior are

*From an address by Charles S. Fay before the Tulane Society of Economics.

Cylinders.			
Kind	Simple	Simple	Simple
Diameter, in.	23½	24	26
Stroke, in.	26	26	26
Valves.			
Kind	Piston	Piston	Piston
Diameter, in.	14	14	14
Travel, in.	7	6½	6½
Steam lap, in.	1½	1	1
Lead, constant, in.	¼	¼	¼
Wheels.			
Driving, diam. over tire, in.	79	69	69
Driving, tire, in.	3½	3½	3½
Driving, jour., main, diam., in.	10½ x 12	10½ x 12	10½ x 12
Driving, jour, others, diam., in.	10½ x 12	10½ x 12	10½ x 12
Engine truck, diam., in.	36	33	33
Engine truck, jour., in.	6½ x 12	6½ x 12	6½ x 12
Trailing truck, diam., in.	50¼	45	45
Trailing truck, jour., in.	8 x 14	8 x 14	8 x 14
Boiler.			
Style	Conical	Conical	Conical
Working pressure, lbs.	200	200	180
O. D. of first ring, in.	72	74½	74½
Firebox, width and length, in.	75¼ x 108½	75¼ x 108½	75¼ x 108½
Firebox, plates, in.	¾	¾	¾
Firebox, water space, in.	4½	4½	4½
Tubes, number and diam.	175—2½ in.	424—2 in.	248—2 in.
Tubes, number and diam. (super.) ..	32—5½ in.	.....	34—5½ in.
Tubes, length	21 ft. 6 in.	20 ft.	20 ft.
H't'g surf., tubes, sq. ft.	3,193	4,422	3,539
H't'g surf., firebox, sq. ft.	204	204	202
H't'g surf., arch tubes, sq. ft.	27	28	28
H't'g surf., total, sq. ft.	3,424	4,654	3,769
H't'g surf., superheating, sq. ft.	755	.....	775
H't'g surf., total equiv., sq. ft.	4,556.5	.....	4,931.5
Grate area, sq. ft.	56.5	56.5	56.5
Tender.			
Tank, style	Wat. bott.	Wat. bott.	Wat. bott.
Frame	13 in. Ch.	13 in. Ch.	13 in. Ch.
Wheels, diameter	36 in.	33 in.	33 in.
Journals, in.	5½ x 10	5½ x 10	5½ x 10
Water capacity	7,500 gal.	7,500 gal.	7,500 gal.
Coal capacity	12 tons	10 tons	10 tons

*Total equivalent heating surface equals total heating surface plus 1½ times superheating surface.



Cylinder Casting; Pacific Type Superheater Locomotive.

shipped, and through which goods from North Atlantic Coast ports and foreign countries were brought in. Then came the development of distributing centers along the Ohio and Mississippi rivers from Cincinnati to New Orleans, and of a secondary series of distributing points at the head of navigation of the principal rivers flowing into the Atlantic and the Gulf. Examples of these interior trade centers at the head of navigation were such points as Richmond, Va.; Columbia, S. C.; Macon, Augusta, Columbus, Ga.; and Montgomery, Ala.; all of which were in existence before the building of railways, and were points at which products of the surrounding territory were collected, and from which goods were distributed by wagons. Where railways were built, these trade centers already having been established, the railways necessarily adjusted their business to existing and controlling trade conditions. Still another class of basing points grew up with the development of railway systems, at gateways, such as Atlanta and Birmingham, Ala., where railway competition without water transportation, had the effect of creating distributing points. The only practical means of distribution was to ship to these trade centers. Subsequently, of course, other distributing points grew up as the result of additional railway building, bringing about more competition. Economic conditions in the South aided the perpetuation of that system. The planters bought their supplies in bulk, in order to supply their labor, and the practice which later grew up of giving credit to planters until the crop was harvested also tended to concentrate trade in the hands of dealers at the larger and financially stronger centers. On account of its long coast line, and its numerous rivers, there is scarcely a locality in the South, the rates to which do not feel the influence of water rates to a greater or less degree. It is apparent, of course, that the rail rates between the cities of the Atlantic and the Gulf coasts are necessarily controlled by water rates, which makes it necessary for the railways to make the same rates as charged for water service, in addition to any value that might attach to service by rail being somewhat more prompt, due to the fact that shipments can be made daily by rail, which is seldom the case by water, and moreover, to the railway rate can be added the cost of insurance that would apply on goods moving by water. Through rates to interior southeastern points are, of course, controlled by the water rate to the port, plus the rate by river to the interior. As an example, the rail rate from New York to Augusta, Ga., has for its controlling factor the ocean rate from New York to Savannah, plus the river rate Savannah to Augusta; likewise, the rates from St. Louis to Memphis and New Orleans are controlled by steamship rates on the Mississippi River. This condition is further complicated by the influence of an all-rail rate from the port to the interior, resulting in a control of all-rail rates between the points involved. As an example of this, take the rate from North Atlantic ports by water to Charleston or Jacksonville, plus the railroad rate to an inland point like Atlanta. This combined rate controls the all-rail rate from New York to Atlanta, and incidentally this same combined rate from New York to Atlanta exerts a controlling influence on traffic from Cincinnati, Chicago and St. Louis to Atlanta, in order to enable merchants and manufacturers of these cities to, in a measure, compete with the merchants and manufacturers of New York. It was largely this competition between the East and the West which resulted in Atlanta being made a basing point, and this is only an illustration of a number of such points in the Southeast. It will be seen, therefore, that the controlling influence of water competition is not confined to that traffic having origin and destination on the water, as here the competition of markets comes in that makes it necessary to, in a measure, equalize these water rates between points having no water service. This influence can also be seen in competition between the interior base points served

only by rail, as against basing points having the advantage of water routes, making necessary a depression of rail rates from such interior cities to those points having direct water service. To illustrate: Chicago could not compete with St. Louis or New York for the trade of New Orleans, unless its rates bore some reasonable relation to the water rate from St. Louis and New York to New Orleans. Cincinnati could not market goods in Savannah, Charleston or Jacksonville, unless consideration was given to Baltimore and other Eastern Cities enjoying direct water communication with those ports. In order to equalize these conditions, the railways have found it necessary to make lower rates to these basing points than they could afford to make to points directly intermediate, for if compelled to make these low rates at all intermediate points, it could only be done with such consequent loss as would make the total business unprofitable and lead to bankruptcy.

The above outline, explaining how the rates to the basing points have been evolved, it will be sufficient to say that the rates to the interior local points are usually made by adding the local rail rates from such basing points to the local points, in order to make through rates.

The rates to Louisiana are made in a very similar manner to those in the Southeast, the controlling factor first being the water rate from New York and Atlantic Ports to New Orleans, with the local railroad rate added to the interior point in Louisiana, thus fixing the adjustment from the Atlantic Seaboard makes it necessary that the rates so established be considered in making rates from St. Louis, Chicago and other interior cities, the Mississippi and Ohio Rivers, of course, being controlling factors from St. Louis, Cairo, Louisville and Cincinnati, for while there is no actual water transportation at present from those cities by way of the rivers, the potential competition afforded by them is just as effective as if the boats were in actual operation, as the moment the rail rates were advanced beyond the figure that was previously created by the River Route, it would be an immediate incentive for the establishment of boat lines. There is scarcely a through rate in use today for which water competition, either actual or potential, is not in a measure responsible.

On account of the public nature of the railway transportation business, the Government has thought wise to take a hand in its regulation, and to this end almost every state in the Union is provided with a railway commission, with greater or less power given it in the exercise of such control. Most of the commissions have been established by legislative act. Our own commission, in the state of Louisiana, as brought into being by a constitutional amendment. The Louisiana commission is composed of three commissioners, the state being divided into three railway commission districts, each represented by a commissioner. This is undoubtedly a mistake, and it would be better if the commissioners each represented the state at large, for, under the present system, it is possible for the commissioners to agree to let the representative of each district decide those cases involved in his particular territory, which would result in a one-man commission, although its creator said it was to be composed of three members.

The powers of the Louisiana commission in the regulation of railways are almost absolute, except for the limits that may be placed upon them by the courts, to whom the railways have the right of appeal. However, this does not always prove effective, as many courts take the view that the commissioners have been elected by the people for the purpose of rate-making, and have not interfered except in some of the most aggravated cases. One of the principal objections to railway commissions as now constituted is the short period for which they are elected, this period usually being four years, and railroad men of experience know that a bright young man in the railroad business does not often become a competent rate clerk within that period. It generally happens, therefore, that before one of the Commissioners has an opportunity to become more or less expert in

rate matters, his term of office expires, and he is succeeded by some one who has been more active in politics, perhaps, and the process of education begins all over again. This brings about a condition involving the rights of millions of dollars worth of property, and the rights of millions of stockholders, by those whom, though they may have the best intentions, do not have the proper time to gain the necessary knowledge and experience to properly administer with equal justice to all, so great a trust.

In the state of Texas there is a commission similar to our own, composed of three members; but they are representatives of the state at large, which is one improvement upon our own commission. Since the inauguration of the Texas commission, it has been their policy to hold Texas for Texans, and through the enactment of the emergency rate law by the Texas legislature some few years ago, the commission of Texas has been able to exercise a controlling influence on interstate traffic, this emergency law giving them the right, when they deem it advisable, to put in what is known as an emergency rate, without a hearing on the part of the railroads, and without giving any explanation of their actions. In one instance, a rate on canned goods was established from Baltimore to Galveston, by sailing vessels, which was even lower than the cost of transportation by a steam vessel, and the railways leading out of St. Louis, in order to protect, in a measure, the canning establishments in Illinois, made a reduction in the interstate rate on canned goods from St. Louis to Texas points. To offset this, the commission, under the emergency rate law, published a rate of 3 cents per 100 pounds on canned goods, in carloads, from Galveston to every point in the State of Texas, and required the railroads to haul them, some times as much as five or six hundred miles, at \$6.00 per car of 20,000 pounds. Of course, the railroads could not stand this, and were forced to advance the rates from St. Louis to Texas points, regardless of the cheap sailing vessel rate to Galveston. On another occasion, rates into Shreveport from Eastern Texas had been arranged so as to concentrate cotton at Shreveport, which was afterwards shipped to New Orleans for export. In order to hold this cotton to the Texas ports, the railway commission of Texas notified the lines serving Shreveport with these rates that unless they were withdrawn, the rates to Galveston would be reduced fifty per cent., and if that did not have the desired effect, they would reduce them still further; but it had the desired effect, and the rate to Shreveport was cancelled, and this cotton, contrary to the desire of the railroads serving Shreveport, was forced to Texas ports, to the detriment of Shreveport and New Orleans. Thus it will be seen that the Texas railway commission is in position to put a rate barrier around the commerce of that state, that is just as effective as would be an import tariff.

All of the other southern states are provided with commissions similar to those in Louisiana and Texas, and from all of them a plaintiff usually gets what he asks for, and generally without regard to the merits of the case. In this way, the Government has more effective control, than it would by ownership, as in this manner it controls the earning power of the roads, without assuming any responsibility for their expenses.

The original Interstate Commerce Act, Fourth Section, known as the long and short haul clause, contained the words "Under substantially similar circumstances and conditions."

Under the old law, the railways had depended upon those words for their right to continue the commercial relations in this country along the lines upon which they had been built up, but the removal of these words from the act prevents them from doing so, except they first make application to the Interstate Commerce Commission and gain the necessary authority. Now, I will attempt a little nearby illustration, which will, I think, make clear to you what this prohibition means:

The M. L. & T. R. R. & S. S. is building and expects to have in operation on January 1, a line from Lafayette, La., to Baton Rouge, which will be fifty-two miles in length, the distance from New Orleans to Lafayette is one hundred and forty-four miles,

which will make the total distance from New Orleans, by way of Lafayette, to Baton Rouge, one hundred and ninety-six miles. The distance from New Orleans to Baton Rouge, by the Y. & M. V. is eighty-nine miles. Baton Rouge, as you know, is situated on the Mississippi River, where there is actual water competition, making the rates exceedingly low, the distance by way of the L. R. & N. is only seventy-eight miles. Now it might happen that the M. L. & T. would like to participate in the carriage of merchandise from New Orleans to Baton Rouge, when it has a line with which to do so; but, if Baton Rouge were an interstate point, the fourth section of the long and short haul clause would prevent the M. L. & T. from engaging in the transportation of merchandise to Baton Rouge, unless the same rates were applied at all intermediate points, including, say, Lafayette, which is one hundred and forty-four miles from New Orleans, and not subject to water transportation. The conditions are entirely dissimilar; Baton Rouge has the same rate today that it will have after the line is completed from Lafayette to Baton Rouge. Some of the brightest lawyers of this country hold that it is beyond the constitutional competency of the United States, as well as of the states, to prevent the legitimate use of property, and if in order to meet conditions already in effect, the M. L. & T. makes lower rates, say, to Baton Rouge than to intermediate points, it has the right to do so, the conditions being entirely dissimilar.

In other words, it is the view that this road would have the right to use its railways in handling traffic to Baton Rouge, without any bearing on the rate to Lafayette, so long as the rate to Lafayette was in itself reasonable; but, in granting that it is so, as a matter of fact, it is not within the constitutional competency of Congress to say that it is not so, contrary to the fact, and it is not within the constitutional authority to forbid it, and Congress has no power to do so.

There might be thousands of similar cases cited in the United States, where a rate to an intermediate point was justifiably higher than to a more distant point. Naturally, the shortest line between two points make the rate, and where there is a longer line between the two points, it must meet the rate of the short line in order to do any business at all, but it cannot do this at its intermediate points, without severe loss. If it did not meet the rate to competitive points, the intermediate points would not be affected, and conditions would not be changed; the rate to the competitive point would still apply via the short line, and the only effect would be to deprive the longer line from engaging in that traffic, and it would likewise deprive the shipper located, say, at New Orleans on the M. L. & T. from reaching Baton Rouge in competition with a like industry located on the Yazoo & Mississippi Valley, as he would have to pay a shipping charge to get his goods from the M. L. & T. to the Y. & M. V., in order to take advantage of the short line rate. Of course, this is all on the supposition that the traffic to Baton Rouge were an interstate proposition, and it is simply used as an illustration; but, being an intrastate proposition, the Interstate Commerce Commission has no control.

Interstate rates being regulated by the Interstate Commerce Commission, and the different state rates being controlled by local State Commissions, there is constantly a conflict of interests between these bodies that will, in the opinion of the best posted traffic men, ultimately bring about a demand that all rates, both State and Interstate, be controlled by a single Government body, without which chaotic conditions in rate-making will be bound to result, from the multiplicity of agents interested in making them from purely local or selfish considerations.

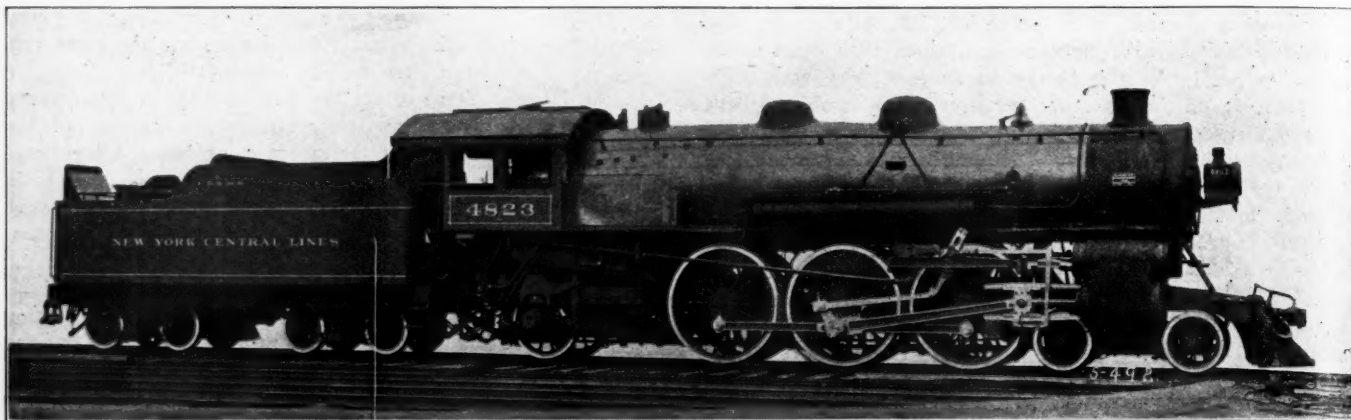
The new extension from Nanowmine, New South Wales, to Peak Hill, was opened on December 10, 1910. The extension is 37 miles long and cost about \$605,000.

TESTS OF PACIFIC TYPE SUPERHEATER LOCOMOTIVE.

The use of high degree superheated steam in high speed locomotives for heavy passenger service has proved of such value that tests made by the Lake Shore & Michigan Southern on a large Pacific type locomotive hauling the Twentieth Century Limited, between Toledo, Ohio, and Elkhart, Ind., are of special interest. The first series of tests was made May 12-14, 1910, with engine 4,821, which was equipped with a fire-tube superheater of the side header type having 24 elements. The cylinders were $24\frac{1}{2}$ in. in diameter, with a 28-in. stroke; the steam pressure was 180 lbs. The trains on each of the three trips consisted of seven Pullman cars, weighing 443 tons, which with the engine and tender made a total of 643 tons. The boiler of the

the degree superheat); speed in miles per hour; steam pressure in boiler; steam pressure in dry pipe; steam pressure in steam chest (all pressure readings were taken by gage); lift of throttle valve in inches; and inches cut-off in cylinder at which engine was working. At the completion of the test the indicating pyrometer used in obtaining the steam temperature was calibrated by testing it with a standard thermometer in an oil bath, the oil being heated by means of Bunsen burners. In this way the proper correction on the pyrometer was obtained throughout the entire range of temperatures met with on the test.

In general, the results were as follows: The degree of superheat was found to have held fairly constant throughout all the runs. Making the proper corrections on pyrometer readings, the superheat was found to have been at all times between the limits



Pacific Type Superheater Locomotive; Lake Shore & Michigan Southern.

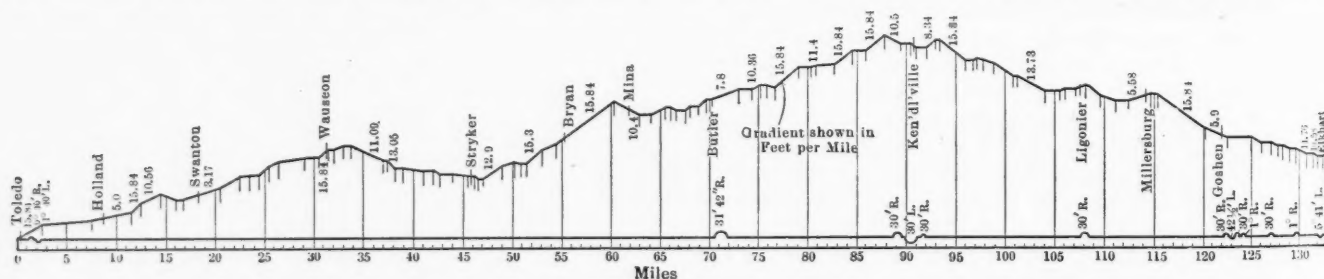
locomotive has a combustion chamber 4 ft. long, and its heating surface is as follows:

Firebox and arch tubes.....	290.3 sq. ft.
217—2 in. tubes, 18 ft. long.....	2,034.6 sq. ft.
24— $5\frac{1}{4}$ in. tubes, 18 ft. long.....	590.7 sq. ft.
Total	2,915.6 sq. ft.
96— $1\frac{1}{2}$ in. superheater tubes.....	493.0 sq. ft.

The general results of the first tests are given herewith and may be regarded as preliminary to the later tests which show improved conditions due to changes in the locomotive. In order to show the results graphically all readings taken during the three tests under varying conditions are plotted, these readings being

of 160 deg. and 199 deg. Fahr. An average shows approximately 177 deg. Fahr. for all conditions. On the run with train No. 26, May 12, the superheat temperature reached 562 deg., giving 197 deg. superheat, considering 144 lbs. as the steam chest pressure. This was due to the fact that after working the engine hard and getting a hot fire the engineer reduced the throttle opening for a short time. In this way a comparatively small volume of steam passed through an exceptionally hot boiler, giving a high temperature reading.

The test showed, as might be expected, that there was some drop in pressure caused by the steam passing through the super-



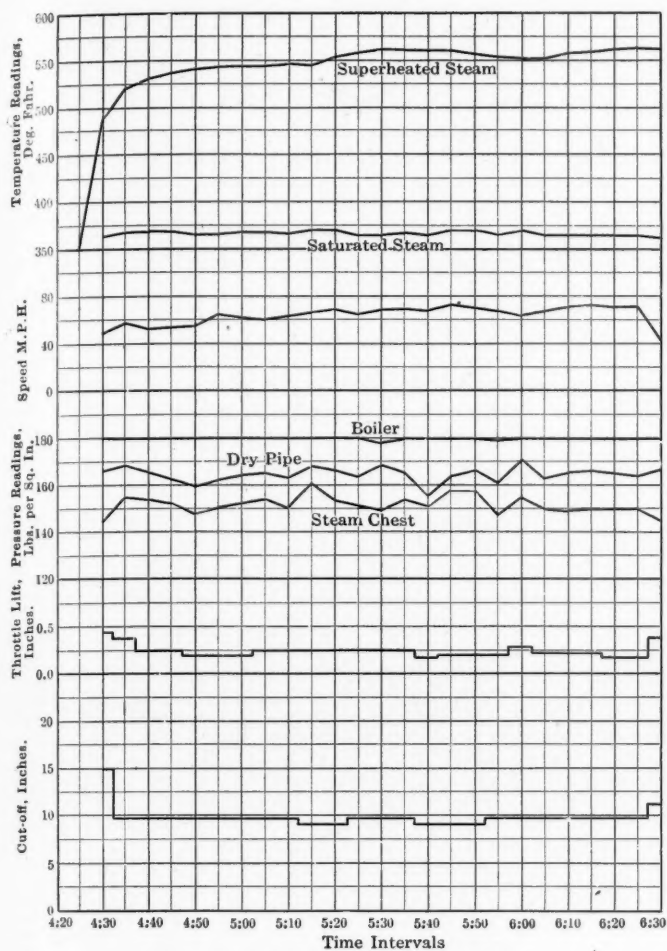
Profile, Between Toledo, Ohio and Elkhart, Ind.; Lake Shore & Michigan Southern.

taken regularly at five-minute intervals throughout the runs. These runs were made at a time when all the test apparatus was in such condition as to cause no doubt as to the reliability of the figures obtained. Locomotive 4,821 was used on all three tests, and each trip was made with seven cars. The working conditions were as follows: May 12, on train No. 26, was an average run; May 13, on train No. 26, was a hard run, the train was behind time all the way; May 14, on train No. 25, two engines were used, the other one being 4,823. This record represents a light run.

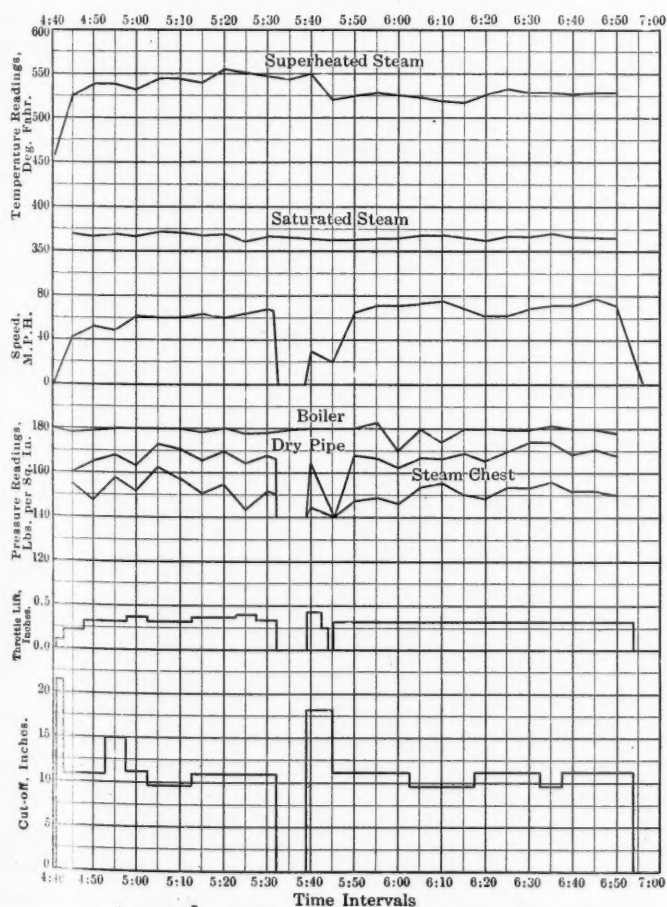
The curves shown on the charts are as follows: Temperature of superheated steam in steam chest, degrees Fahr. (taken by means of thermocouple and indicating pyrometer); temperature of steam in steam chest if it were in the saturated instead of superheated condition (the difference between these curves gives

heater. This locomotive has 24 superheater elements, but as a result of the tests engines now being built for this company will have more elements. From the measurements of coal during the tests, compared with a test of an engine without a superheater on the same runs, the superheater engine shows an economy of 15 to 20 per cent. over other engines of the same class. The most remarkable difference was in the water consumption, for in comparing figures for the water consumption of a superheater engine with those obtained from an engine without a superheater running on the same trains, it was found that the superheater engine showed a saving of over 25 per cent.

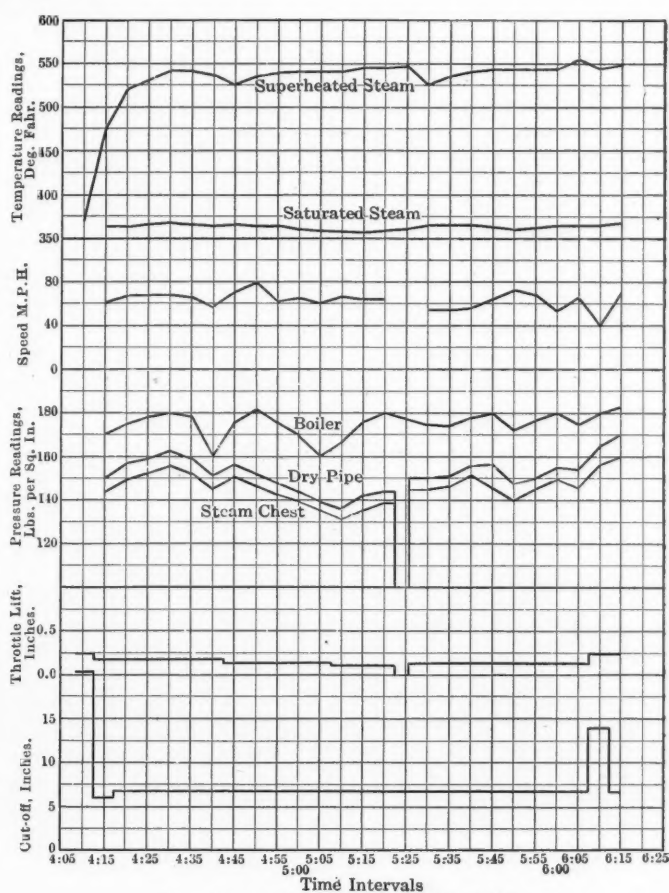
Summing up, the average superheat for these tests was 177 deg. based on 150 lbs. steam chest pressure. The coal consumption was 15 to 20 per cent. less than with similar engine without



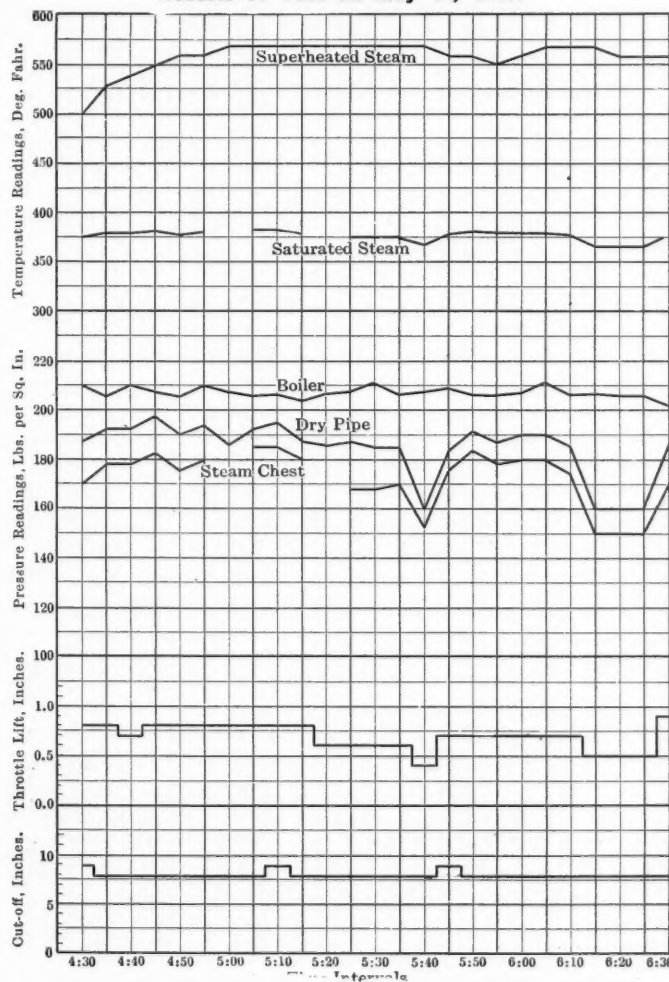
Results of Test on May 12, 1910.



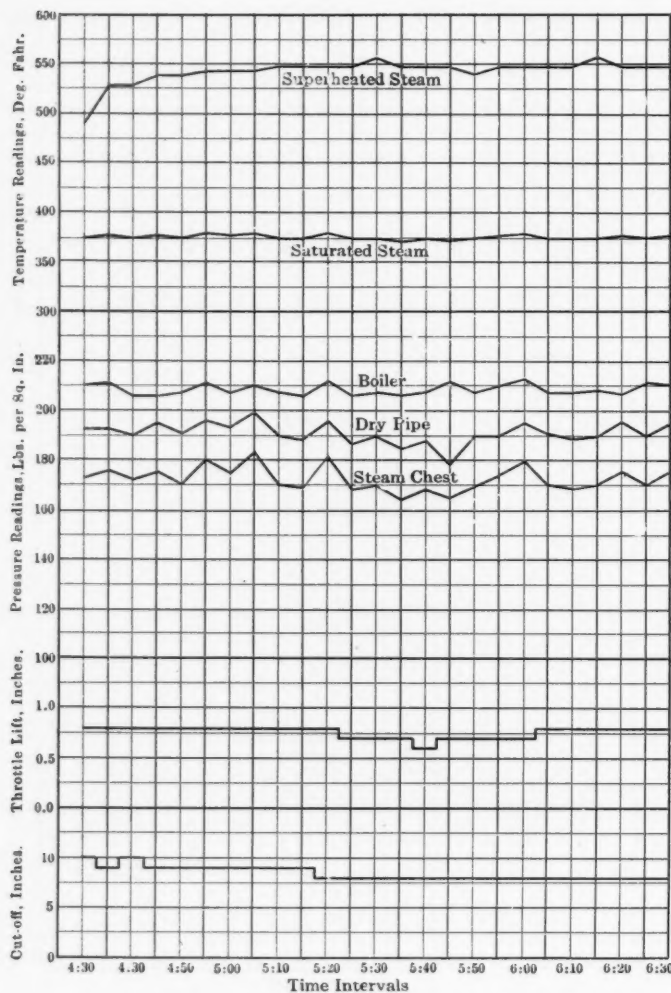
Results of Test on May 13, 1910.



Results of Test on May 14, 1910.



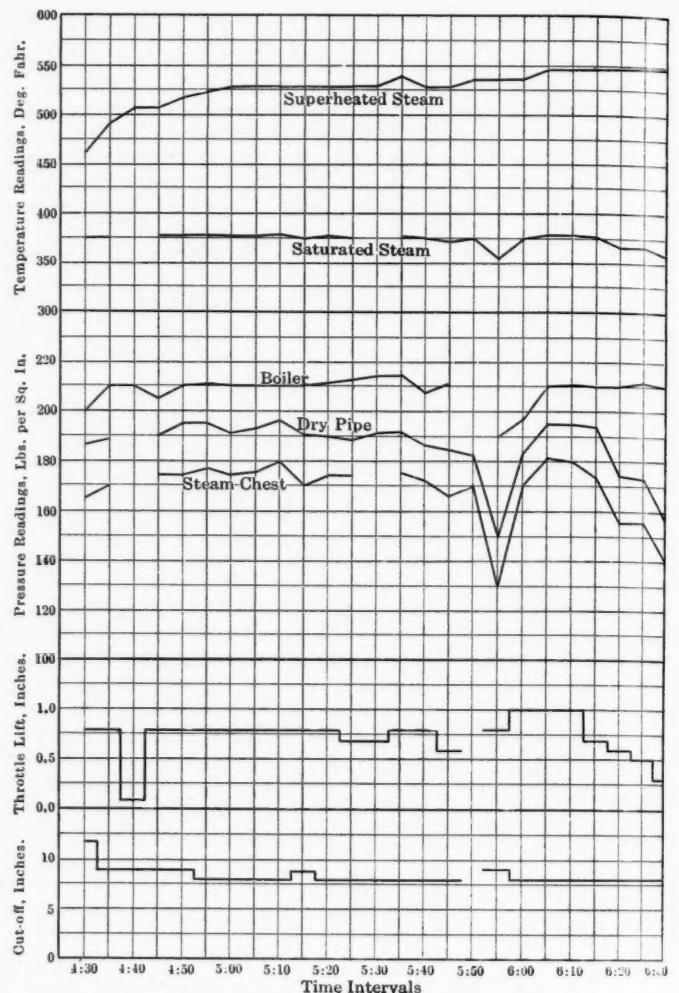
Results of Test on October 15; Cross-Over Pipe In.



Results of Test on October 17; Cross-Over Pipe Out.

superheater. The water economy was about 25 per cent. greater.

The flash point of the valve oil when carefully warmed was 590 deg. Fahr. The engine used on an average 5 pints of valve oil over the division, as compared with $3\frac{1}{2}$ pints for the non-superheater engines. This includes the oil used in the valve chest, cylinders and air pump. Considerable trouble was experienced with the lubrication of the engine until a valve was applied, here illustrated, which admitted steam to two Y fittings located at the lubricator in the oil pipes leading to the steam chests. The steam chest choke plugs were drilled out, so there was a $\frac{3}{8}$ -in. clear opening from the lubricator choke plug clear into the steam chest. The auxiliary valve is mounted in such a position that the stem comes in contact with the throttle lever and it commences to open after the throttle has been opened two or three notches. The action of this device is to keep a continual current of oil and saturated steam flowing into the steam chest. It will be noted that the auxiliary valve is supplied with steam direct from the boiler so that the pressure available is always greater than the pressure in the steam chest, consequently, the



Results of Test on October 19; Cross-Over Pipe Out.

flow of oil is continuous. The drawing shows a separate dry pipe to supply this valve, but later designs take steam for the valve from the right hand steam turret. The Y fittings should be applied with the branches pointing up so that the oil will not flow back into the auxiliary valve. The locomotive is lubricated by two bull's-eye lubricators; the one on the fireman's side has one feed running to each cylinder, being tapped into the cylinder at the middle and as close to the top as possible. The middle feed is not used. The lubricator on the engineer's side has a feed running to each steam chest and the third feed supplies the air pump. The Y fittings for the auxiliary valve are screwed on the lubricator. The oil pipes leading to the steam chest are branched at the steam chest, one feed going into each end just inside of the bushing. Practically no difficulty has been experienced in lubricating the engine since the above device was applied. New locomotives are being equipped with a single 5-feed lubricator instead of two triple feeds.

SECOND SERIES OF TESTS.

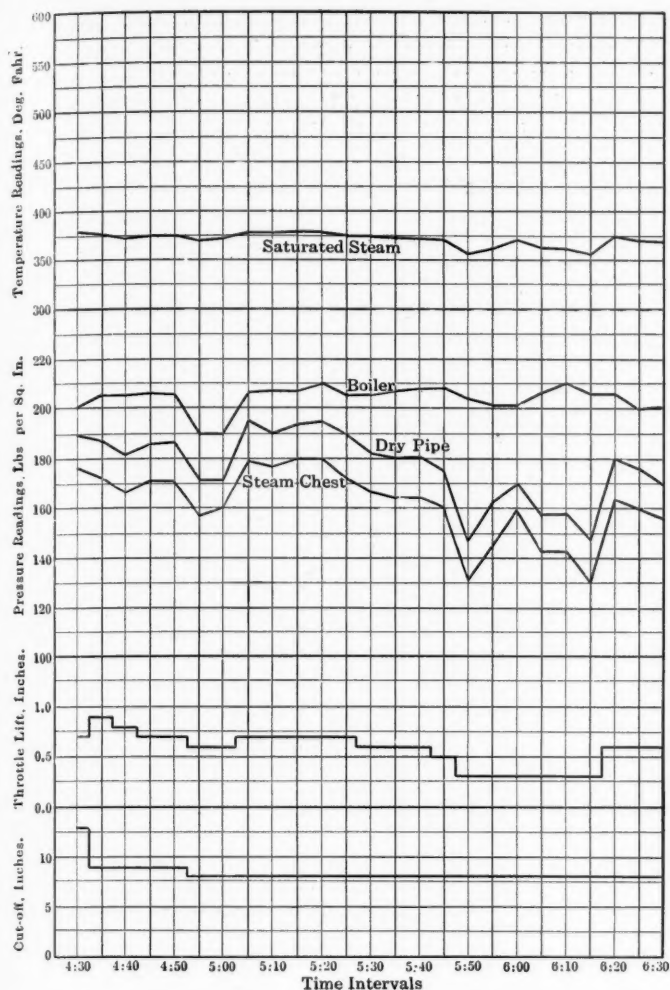
The second series of tests with the same locomotive, 4,821,

LAKE SHORE & MICHIGAN SOUTHERN RAILWAY SUPERHEATER TEST OF ENGINE 4821.

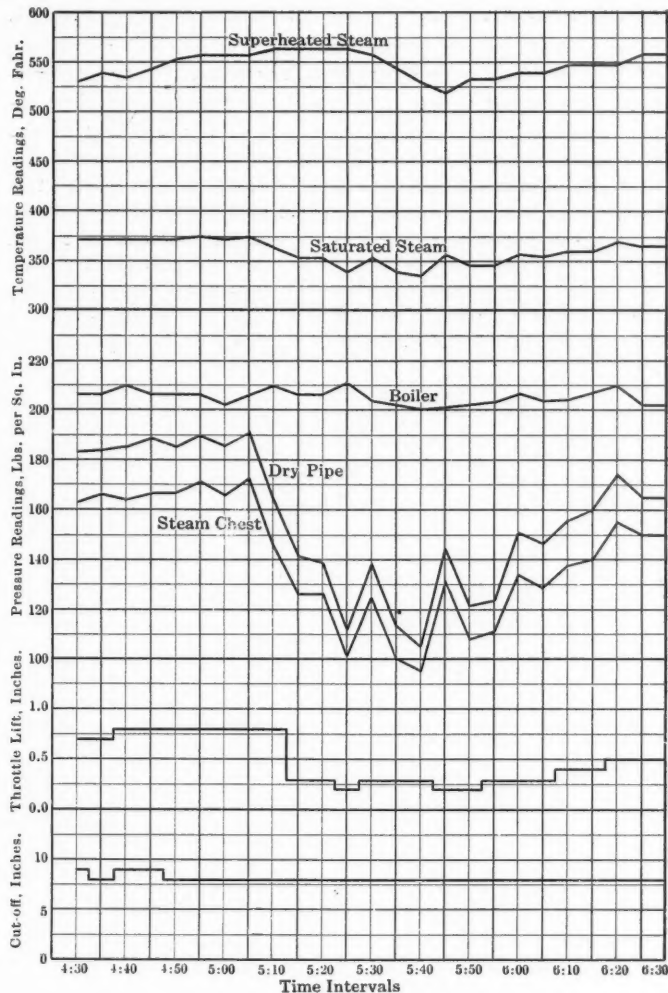
Showing effect of crossover pipe joining steam pipes in smokebox.

Date—1910	Train.	Tons wt. train including Locomotive.	No. Cars.	Was Crossover pipe in place?	Av. speed, M. P. H.	Av. rev. lever notches from center.	Av. throttle lever notches from zero.	Av. boiler press.	Av. dry pipe press.	Av. st. chest press.	Av. press. drop through super- heater.	Av. press. drop in steam chest (during admission).	Av. degrees super- heat.
Oct. 15.....	26	706	8	Yes	62.8	8.12	6.92	207	184.3	172.6	11.7	14	181.5
Oct. 23.....	26	643	7	Yes	61.6	8.12	4.92	205.1	156.5	140.0	16.5	15.5	184.5
Oct. 25.....	26	833	10	Yes	60.0	8.25	7.97	206.7	189.3	170.4	18.9	17.5	174.0
Oct. 17.....	26	833	10	No	61.8	8.48	7.64	208	191.1	172.5	18.6	30.3	161.8
Oct. 19.....	26	833	10	No	59.8	8.40	7.20	208	186.4	169.0	17.4	27.5	153.9
Oct. 21.....	26	770	9	No	60.3	8.04	5.65	203.8	177.0	162.0	15.0	28.5	.....

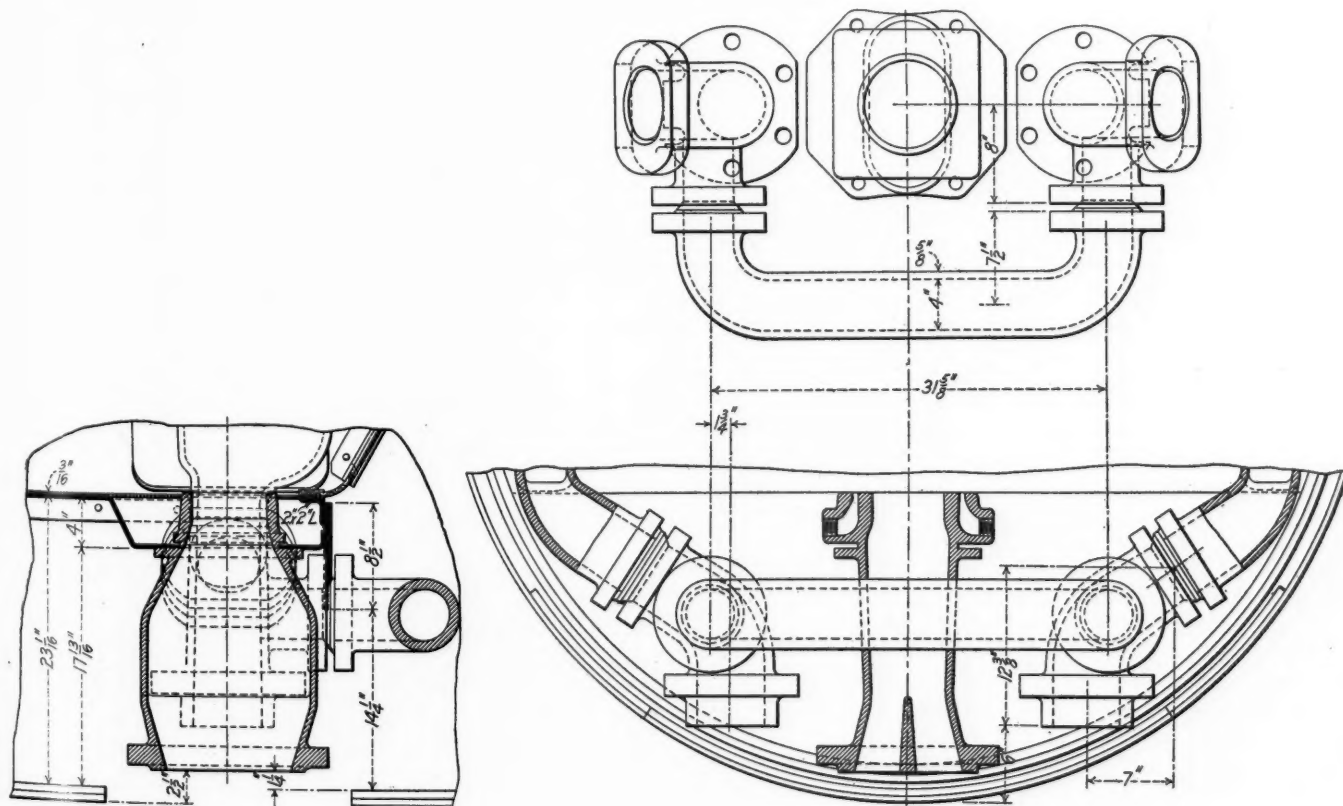
*NOTE.—Diameter of cylinders, 22 in. Engine should carry 200 lbs. boiler pressure. Same engine crew throughout tests. All tests run over Air Line Division.



Results of Test on October 21; Cross-Over Pipe Out.

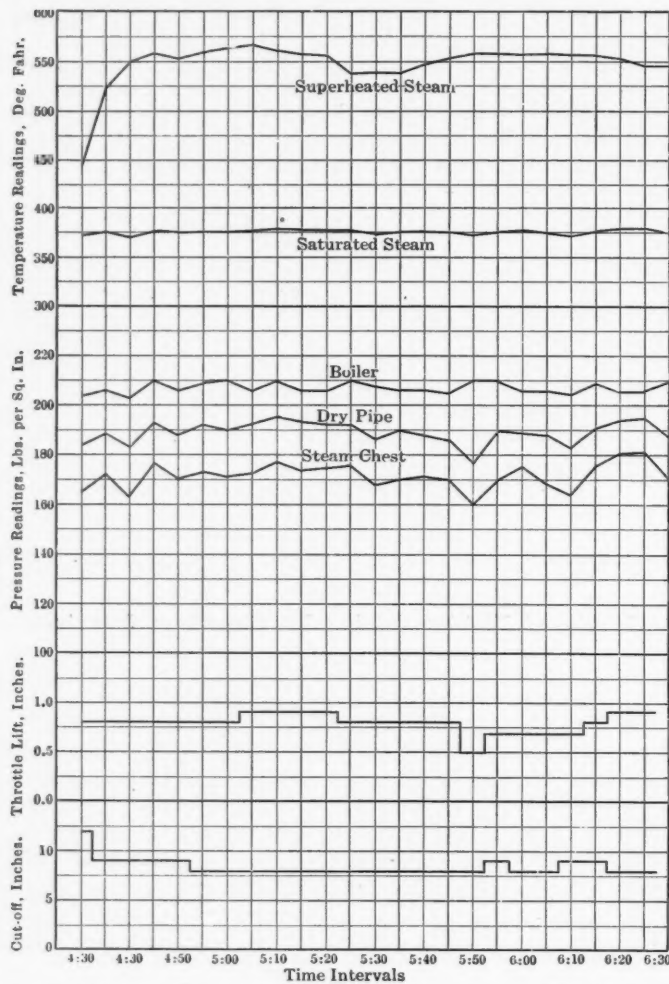


Results of Test on October 23; Cross-Over Pipe In.



Cross-Over Pipe as Applied to Superheater Locomotive; Lake Shore & Michigan Southern.

was made October 15 to 25, 1910, on train No. 26. During the preceding test the engine was run with 180 lbs. boiler pressure, and the cylinders were enlarged to correspond. The performance of the engine under these conditions was economical as regards coal and water consumption, but in the handling of the train there was very little difference between it and any of the other similar engines without superheaters. It was felt that if the steam pressure was raised to the normal working pressure of 200 lbs., the cylinders reduced to the regular diameter of 22 in., and an equalizing pipe applied to connect the two sides of the superheater just above the cylinders, the performance of the engine would be improved, and the second test was made to determine these points. In these tests the number of cars in



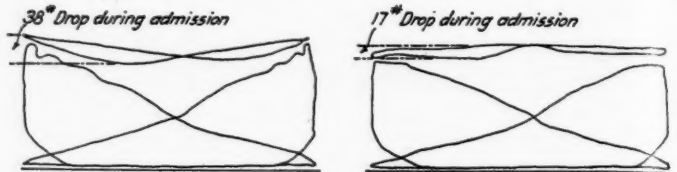
Results of Test on October 25; Cross-Over Pipe In.

the train varied from 7 to 10, and the total weight carried, including the locomotive, was from 643 to 833 tons.

The results of the tests, as shown by the accompanying tables and indicator cards, verified the conclusion that the effect of the equalizing pipe was to maintain a much more uniform pressure in the steam chest during the admission period than was obtained without this pipe. This test also showed that there was still a considerable drop in pressure through the superheater, and, as stated previously, the new locomotives are being furnished with a greater number of superheater elements which it is expected will reduce the drop in pressure to a reasonable amount, and at the same time will increase the degree of superheat obtained.

The degree of superheat on days when the cross-over pipe was in place shows higher than on days when it was removed. This was true of all three runs, indicating that the figures may be taken as reliable. The difference may be partly due to the fact that on the three days with the cross-over pipe in place the engine was worked slightly lighter, as shown by the columns

headed "average throttle" and "average steam chest pressure." The charts show graphically data similar to that obtained in previous tests and at intervals of five minutes throughout each test run. The speeds obtained on this second test, considering the number of cars and weight of train, show an excellent en-



Cross-over pipe out.
October 17, 1910.
Time—4.45.
Speed—52.4 m.p.h.
Boiler press.—208 lbs.

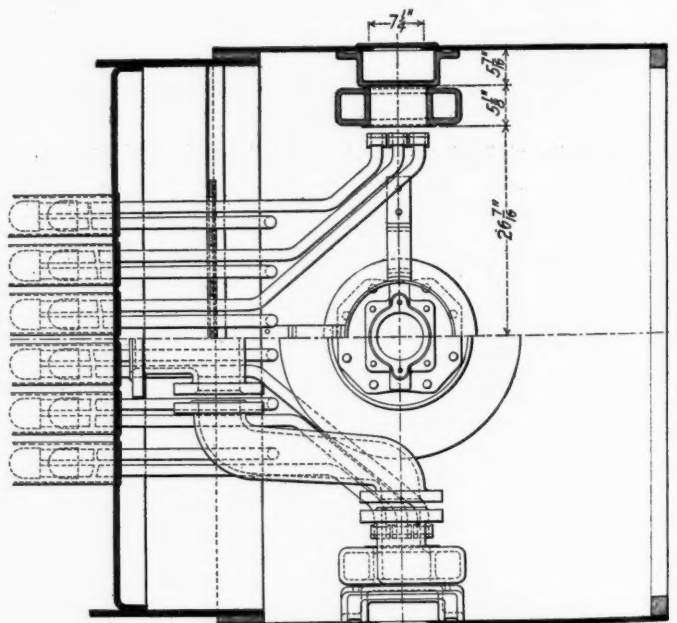
Cross-over pipe in.
October 23, 1910.
Time—4.40.
Speed—48.3 m.p.h.
Boiler press.—206 lbs.

Indicator Cards Showing Effect of Cross-Over Pipe.

gine performance, and completely justify increasing the boiler pressure and reducing the diameter of the cylinders.

The general dimensions of these locomotives, which were built by the American Locomotive Company, are as follows:

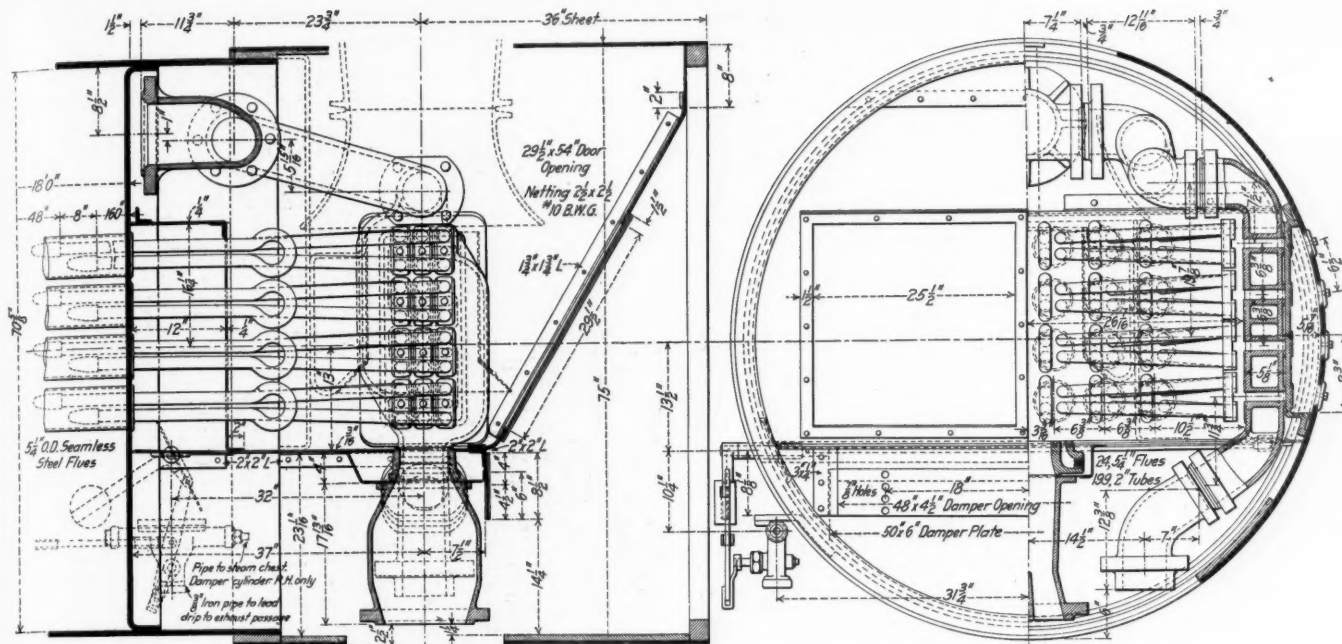
General Data.	
Type	Pacific
Tractive effort	29,200 lbs.
Weight in working order	262,000 lbs.
Weight on drivers	170,700 lbs.
Weight of engine and tender in working order	424,000 lbs.
Wheel base, driving	14 ft.
Wheel base, front truck	6 ft. 8 in.
Wheel base, rear driver to trailing truck	10 ft. 11 in.
Wheel base, total	36 ft. 6 in.
Wheel base, engine and tender	67 ft. 10 in.



Top View of Superheater for Pacific Type Locomotive.

Ratios.	
Total weight ÷ tractive effort	8.98
Weight on drivers ÷ tractive effort	5.85
Tractive effort × diam. drivers ÷ heating surface	792
*Tractive effort × diam. drivers ÷ equivalent h't'g surf.	631
Total heating surface ÷ grate area	518
*Total equivalent heating surface ÷ grate area	649
Firebox heating surface ÷ total heating surface, per cent.	9.5
*Firebox heating surface ÷ total equivalent heating surface, per cent.	7.94
Weight on drivers ÷ total heating surface	586
*Weight on drivers ÷ total equivalent heating surface	467
Total weight ÷ total heating surface	899
*Total weight ÷ total equivalent heating surface	717
Volume both cylinders, cu. ft.	12.35
Total heating surface ÷ vol. cylinders	236
*Total equivalent heating surface ÷ vol. cylinders	296
Grate area ÷ vol. cylinders	4.56

*Total equivalent heating surface equals total heating surface (2,915.6 sq. ft.) plus 1 1/2 times superheating surface = 3,655.1 sq. ft.



Superheater for Pacific Type Locomotive; Lake Shore & Michigan Southern.

Cylinders.	
Diameter	22 in.
Stroke	28 in.
Valves.	
Kind	Piston
Wheels.	
Driving, diameter over tire	79 in.
Engine truck, diameter	36 in.
Trailing truck, diameter	50 in.
Boiler.	
Style	Conical
Working pressure	200 lbs.
Outside diameter of first ring	72 in.
Firebox, width and length	75 in. x 108 in.
Tubes, number and diameter	217—2 in.
Tubes, number and diameter (superheater)	24—5 1/2 in.
Tubes, length	18 ft.
Heating surface, tubes	2,625.3 sq. ft.
Heating surface, firebox and arch tubes	290.3 sq. ft.
Heating surface, total	2,915.6 sq. ft.
Heating surface, superheating	493 sq. ft.
*Heating surface, total equivalent	3,655.1 sq. ft.
Grate area	56.3 sq. ft.
Center boiler, above rail	9 ft. 9 in.
Top smokestack, above rail	14 ft. 7 7/8 in.

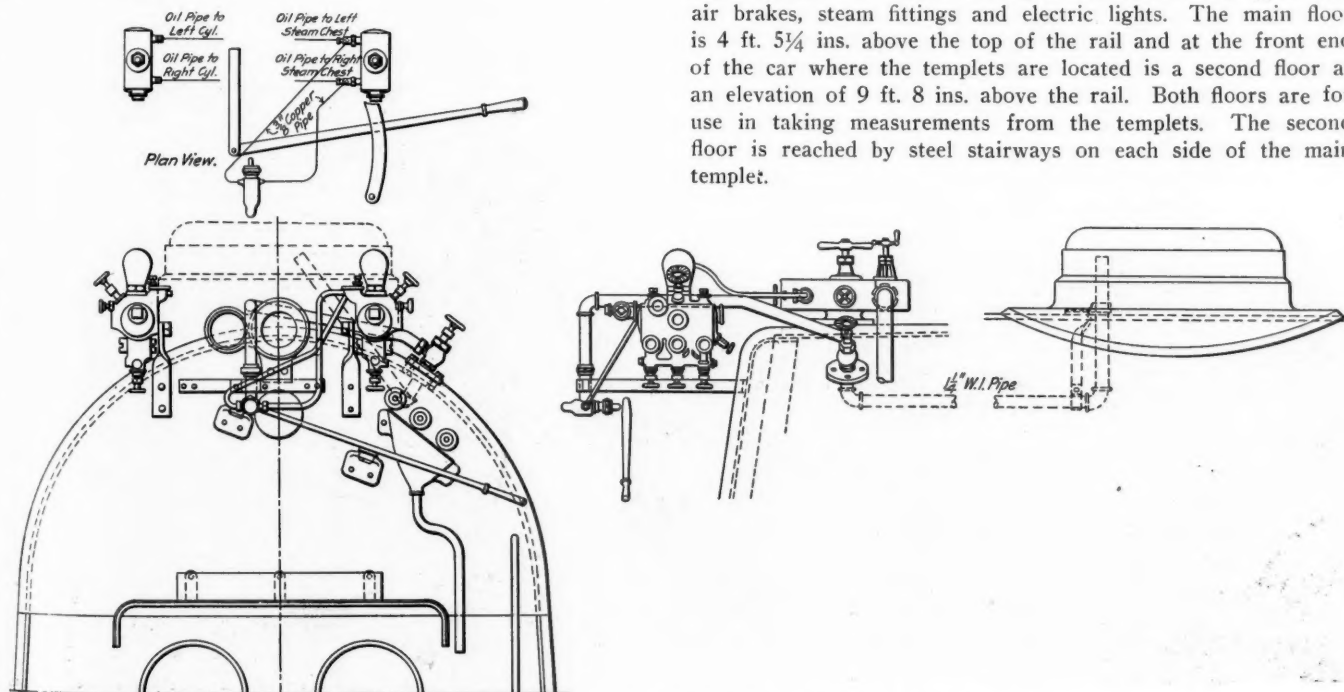
Tender.	
Tank, style	Water bottom
Wheels, diameter	36 in.
Water capacity	8,000 gal.
Coal capacity	14 tons

*Total equivalent heating surface equals total heating surface (2,915.6 sq. ft.) plus 1 1/2 times superheating surface = 3,655.1 sq. ft.

PENNSYLVANIA CLEARANCE CAR.

The Pennsylvania has just put in service a new clearance car designed in the office of the Engineer of Maintenance of Way and built at the Altoona shops. It is now being run over all divisions to secure correct measurements of the distances from the track to projecting portions of station buildings, tunnels, bridges and other objects. The car has an apparatus for indicating automatically while moving on curves the elevation of the outer rail and the degree of curvature.

The car is 54 ft. 8 3/4 ins. long over all, and 30 ft. between truck centers. It is built entirely of steel, and is equipped with air brakes, steam fittings and electric lights. The main floor is 4 ft. 5 1/4 ins. above the top of the rail and at the front end of the car where the templets are located is a second floor at an elevation of 9 ft. 8 ins. above the rail. Both floors are for use in taking measurements from the templets. The second floor is reached by steel stairways on each side of the main templet.



Lubricating Arrangement on Superheater Locomotive; Lake Shore & Michigan Southern.

All measurements are taken at the center of the front truck, from which clearances are computed. The main templet, which is erected directly over the center of the truck, has a width of 10 ft. between elevations 2 ft. and 12 ft. above the top of the rail, exclusive of the fingers or feelers attached to the sides. From an elevation of 12 ft. above top of rail, the templet recedes towards the middle of the car at an angle of 45 degs., reducing the width of the templet to 4 ft. at the top, at an elevation of 15 ft. above top of rail.

Immediately in front of the main templet there is an auxiliary templet, designed to measure overhead bridges, tunnels and other objects between elevations 17 ft. and 20 ft. above the top of the rail. This auxiliary templet has the same dimensions as that part of the main templet between elevations 12 ft. and 15 ft. It is supported on a center shaft enclosed in an upright cylinder and is capable of being raised by a crank and ratchet to a height of 18 ft.

Enclosed in steel cylindrical boxes with translucent glass fronts facing the templets is a series of electric lights which extend from the floor of the car on each side to a height of 15 ft. above top of rail. The well-diffused light thus obtained makes it possible to take measurements at night, as well as in dark tunnels.

The fingers or feelers attached to the sides and the top of the templets are 2 ft. long and are spaced 6 ins. apart. They are hinged to the templets and are held in the different positions by friction. Attached to the feelers and the sides of the templet are graduated scales which indicate automatically the distance from the rim of the templet to a side or overhead object. In addition, a small board equipped with a set of feelers spaced one inch apart has been provided to measure cornices of roofs, of shelter sheds, or other irregular objects close to the track. This board is detachable and can be fastened to the side of the templet at any point desired. It is shown in Fig. 2 just above "9."

As the car passes over a curve, an attachment on the rear truck of the car indicates the degree of curvature on a scale inside of a cabinet which has been erected in the middle of the car. In this cabinet there is suspended a long pendulum which indicates automatically the elevation of one rail of the track over the other.

With all of the attachments working automatically, it is

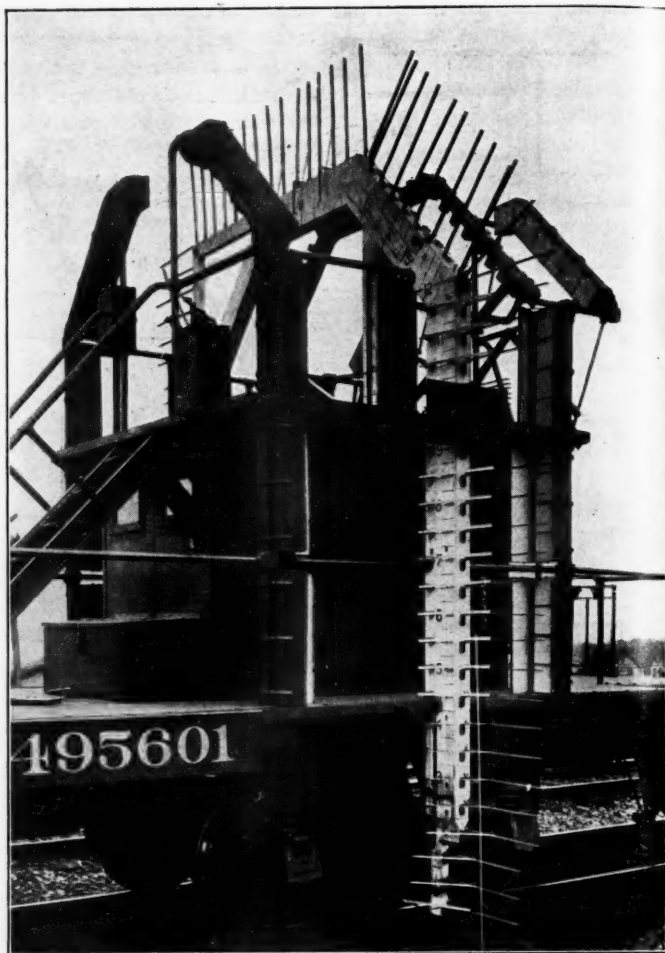


Fig. 2—Pennsylvania Clearance Car; Main Templet.

possible to take clearance measurements while the car is running at a speed of four miles an hour. Two men can operate the car, one taking the readings of the scales and the other recording them; but where clearances are close and irregular three men are required.



Fig. 1—Pennsylvania Railroad Clearance Car.

JOHN M. FORBES IN ILLINOIS.*

The possibility of getting a European market for the grain of the West was another matter that engaged Forbes' thoughts. He was full of schemes for articles in American magazines and for letters in the *London Times* showing how much lower the price of grain would be when the West was provided with adequate railway transportation. Nothing came of these plans, but curiously enough, toward the end of the Crimean war, Forbes was employed as agent in the purchase of large supplies of breadstuffs to be sent to France. Though the orders came through Baring Brothers, it was known that the buyer was Louis Napoleon.

Forbes was deeply interested in the project for a railway from the Mississippi to the Pacific. Ever since the beginning of the gold fever in California he had made ventures with clipper ships, "practically yachts from 1,500 to 3,000 tons measurement, racing day and night around the Horn, making wonderful passages and getting wonderful prices for their goods," and his brother-in-law, Robert S. Watson, had established a commission house in San Francisco. From Forbes' knowledge of conditions in California he felt strongly the political and military, as well as the economic importance of a railway to the Pacific; and he repeatedly urged upon members of Congress the necessity of federal aid for it.

Illinois, like her sister states, failed in her early efforts at "internal improvements," the panic of 1837 dashing all hopes. Even as late as 1850, all that she had to her credit were a canal connecting the Illinois river with Lake Michigan, a few miles of isolated railway in the middle of the state, and a number of unused railway charters. In 1850, however, the first waves of the returning tide bearing both population and capital, reached Illinois, and the Thirty-first Congress reversed the policy of its predecessors, and in September, 1850, passed the first of the acts granting public lands to aid railway development.

By the terms of this act the Illinois Central was to receive a right of way two hundred feet in width, and on each side of it every other square mile or "section" of land for a distance of six miles. The wealth granted to the Illinois Central by the government and the state gave it credit in Europe and building was at once begun. The men of the Michigan Central were naturally on the alert. Here was a means by which they could secure entrance to Chicago. The first construction done by the Illinois Central was to lay a dozen miles of track out of Chicago to connect with the Michigan Central, and, in return, the older road stood ready to supply as much as \$2,000,000 in ready money; but a \$5,000,000 loan which was presently secured by the Illinois Central through Baring Brothers made it unnecessary for the Michigan Central to furnish more than \$800,000.

The Illinois Central, however, although it was sure to bring a large amount of business to the older road, could not be an adequate outlet for the expanding energies of the Boston capitalists, since it was under New York control. Yet go ahead the Michigan Central must, for the Michigan Southern had no sooner reached Chicago than its owners began the construction of the Chicago & Rock Island Railroad, and, building with incredible rapidity for those days, accomplished the distance of 181 miles to the Mississippi river in twenty-two and a half months. True gamblers, they borrowed recklessly and built lightly, at the same time forcing men more prudent and more honest to enter into their game.

Thus it came to pass that, early in 1852, the Michigan Central men began to look into Illinois railway charters. There were plenty such in the hands of local capitalists, who, having been unable to make use of them, were ready to sell out. Of the Chicago & Aurora 13 miles had been built; beyond that,

stretching to the southwest, and touching the Mississippi at two points, had been planned the Central Military Tract Road, the Northern Cross Road, and the Peoria & Oquawka, or Oquawka—"Phoebus, what a name!" exclaimed Forbes as he wrote it. In order to make the charters acceptable to eastern capitalists, amendments were secured at a special session of the Illinois legislature in June, 1852, which permitted the extension of the lines to make necessary connections, and which put the roads on an equal footing with the Illinois Central as regards the clear possession of rights to establish rates for passengers and freights.

Forbes' work now began. . . . Forbes went from one man to another, confident in the validity of his large vision of the future, and yet never losing his sense of precisely what could be attempted and accomplished at any given moment, men and things being what they were. By his aid the first amounts were raised without much trouble—for the Chicago & Aurora was an undoubted bargain; but in the next few years, as it became plain that the road was destined to be, not a local feeder of the Michigan Central but part of a trunk line between Chicago and the Mississippi, he was drafted for heavier work than that of "following the lead" of others. It was the story of the Michigan Central over again, only the pace was more rapid. The Chicago & Aurora and the connecting road to the West—the Central Military Tract—were soon combined under the name of the Chicago, Burlington & Quincy, the western management being in the hands of James F. Joy, the shrewd and enterprising Detroit lawyer. It presently became clear that the roads further West, building from Galesburg towards Burlington and towards Quincy, could not, with local management, command the necessary resources to enable them to reach the Mississippi in any sort of season. The C. B. & Q. directors, therefore, in order to hold their own against the Rock Island, which had already crossed the state, voted money to complete the construction of the two roads. The whole thing was so much in the future, and to outsiders appeared so vast and so uncertain, that the additional sums had to come chiefly from the men who were already involved. Thus, in order to take his director's share in one of these loans, Forbes sold at 70 \$100,000 of manufacturing stock which he had bought at par. At another time he had to endorse alone notes to the amount of \$60,000 to pay for the first ten locomotives needed by the Peoria & Oquawka and the Northern Cross.

Fortunately the return on this heavy investment was both large and immediate. Plenty of business was waiting for the new road at the Mississippi river, and it also commanded for a time all the traffic from the South over the main line of the Illinois Central. It is small wonder, then, that in six months of 1856 the Central Military Tract paid 15 per cent. dividends in cash and stock, or that Forbes was able to write of the C. B. & Q.: "Their earnings are so large that if they accumulate them and then divide largely, it may have a bad effect among the country people who pay them freight."

This, indeed, was the time of glad, confident morning, never again to occur in the history of railway building in the United States. No one exceeded Forbes in faith in the future of western railways; yet the loose management invited by such rapid building constituted a danger which few saw so clearly as he.

. . . A final obstacle to the orderly upbuilding of a system of western railways was the lavish extension of federal aid; for with the land grants in 1850 to the Illinois Central and the Mobile & Ohio, Congress had let down the bars. The local need of insignificant towns on the west bank of the Mississippi in Iowa and Missouri with plans for "Pacific" railways, was indubitably as great as it had been in Illinois, and, with the acceleration of western expansion since 1849, the importance of these roads to the country at large could also be plausibly urged. On all such applications Congress was now almost certain to act favorably.

These prospects of railway building made easy portended serious things to the men interested in the Michigan Central and the C. B. & Q. Having built roads successfully with their own

* From a forthcoming biography of John M. Forbes, who, at his death in 1898, was chairman of the board of directors of the Chicago, Burlington & Quincy. His service with that company and with the Michigan Central made him a prominent railway man for fifty years. Previous articles dealing with Mr. Forbes' activities as a pioneer appeared in our issues of December 2, page 1039, and December 23, page 1188.

resources, they could not but object to a scheme which would force them into a ruinous competition with roads having the advantage of government aid. . . . Yielding to clamor, Congress passed land grant acts in 1852, 1853, 1856 and 1857, on an increasing scale of lavishness. Clear as had been the interest of Forbes and his friends in preventing, if possible, these donations, they could not afford to bend over backwards by refusing to have anything to do with the lines thus favored. Since roads were now sure to be built across Missouri and Iowa which would connect with their roads at Quincy and at Burlington, it would be folly to let these enterprises fall into rival hands. The first of the roads for which Boston capitalists were thus forced to find money was the Hannibal & St. Joseph, a line some 200 miles long, planned to cross the northern part of Missouri from the Mississippi to the Missouri river. Besides having a land grant of over 600,000 acres, it possessed the guarantee of the state for its bonds to the amount of \$1,500,000. In spite of its auspicious beginning, however, the road for some years made little progress in construction. Its local management was ineffective, its eastern interests were in the charge of Forbes, who, overloaded with railway work, was beginning to break down; finally, the contract under which the work of construction was to be done was a preposterous agreement which enabled the contractor to have his own way about everything all the time. For a number of years all that this costly investment meant was that Missouri was safe from the control of any rival of the C. B. & Q.

Again in 1856 the bounty of Congress compelled the men in the Chicago, Burlington & Quincy to scurry for capital. Stretching westward from their terminus at Burlington, Iowa, was the Burlington & Missouri River, a little road for building which bonds bearing 10 per cent. interest had been sold at 60 cents on the dollar, and which, after four years of effort, had succeeded in struggling 12 miles toward the goal of its ambition, the western boundary of the state. Now it leaped to fame by being one of four railways in Iowa to receive land grants, its allotment, the smallest of them all, being 359,000 acres. With this dowry it awaited the overtures of the East.

Early in 1857 James F. Joy appeared in Boston eager to demonstrate to the C. B. & Q. directors the importance of this Iowa road as a feeder to their line. Forbes himself needed no convincing. As far back as the summer of 1853, only a year after the Michigan Central had entered Chicago, his railway-building imagination, leaping westward a state at a time, had seen the value to the Michigan road of this route across Iowa, and at a considerable expense he had had preliminary surveys made over the whole line. Now, after four years of feverish "development" in Illinois, Iowa's turn had come. But however great the opportunity here, in the East, Forbes' prophesy of evil days was beginning to be fulfilled. The market was glutted with railway securities, and the Boston banking house of John E. Thayer & Brother, on which he had always relied, failed him. Discouragement and opposition, however, always the most effective stimuli to Forbes, spurred him to put the thing through with a rush.

Beyond question, the financing of western railways in the fifties was to be classed among occupations as "extra hazardous." Not only were these undertakings on a larger scale than had been known in this country and in a field of industry the laws of which were imperfectly worked out; but the greed of the people had not permitted for them a normal and even development. The clamor for national aid had increased in inverse proportion to the justifiable need of the district which made the demand; and at last Congress, misguidedly enacting the will of a misguided people, had committed the supreme act of demoralization in its lavish gifts of land.

In connection with the Hannibal & St. Joseph, however, Forbes' power as a railway reorganizer was brilliantly shown. When after the panic of 1857 he was called upon to set things going again, he found himself engaged in a contest with a "self-made man, shrewd, hard, and rich," "the very type of a railway contractor," who wished to build a "cheap contractor's road to sell," while Forbes was determined to have "a solid one, adapted

to being held and used for business purposes." Finally, in desperation, after a "four-months' nightmare," Forbes threatened to throw over the enterprise altogether, under which pressure the contractor gave in.

The consequence of this success was the obligation to raise the million and a half of money necessary to complete the road. This task Forbes set about after much the same fashion in which he had achieved the sale of Michigan Central bonds six months before.

With the help of Baring Brothers, and of his ever reliable Quaker friends in New Bedford, sure to have money to invest in a good thing at a low price which he might have to offer, Forbes' list was made up. The bonds were taken at 60, and under the strong management which he had provided, with John W. Brooks at the head, Forbes felt that the road could now be left to take care of itself. Early in 1859 it was successfully completed; the other railway in Missouri aided at the same time by a land grant was ten years longer in getting across the state.

These long labors for the rehabilitation and reorganization of the Hannibal & St. Joseph, and the Burlington & Missouri River, after the panic of 1857 constitute the best commentary on the values of Forbes' warning in 1853 concerning the evil of land grants. It is true that the grants accelerated the development of certain states; and if acceleration of development is in itself a benefit, that much is to be put to their credit. As for the aid to the railways, the need of which was so plausibly urged, whatever accrued there was confined chiefly to those systems that were large and powerful enough to have done without it. The many local roads that the grants brought into existence or maintained in a semblance of life could not command men of sufficient ability, honesty, and financial resources to avail themselves of the advantage thus given them. Even the Illinois Central, with its auspicious beginning, met disaster twice in the first seven years of its life. When, on the other hand, as in the case of the roads dominated by the C. B. & Q. interests, the land grants were managed with care and foresight, they ultimately sold at prices averaging nearly ten times the original value of the land. Thus in the end the result was exactly the opposite of what Congress had intended.

With his success in putting into good condition the roads which constituted western extensions of the C. B. & Q. systems, the first period of John M. Forbes' career as a railway builder came to an end. Covering the years from 1846 to 1860, it was, in its general limits, co-incident both in time and in place with an important epoch in the development of the railway system of the country. The western roads built in these years were in the nature of things speculative undertakings, and money would not be risked in them except by men hoping for large profits. Sometimes these profits came through participation in generously estimated construction contracts, sometimes in ways still less creditable, even to downright dishonesty. On the other hand, when men of integrity were in charge their returns must come from high rates of interest on money lent, and from the earnings of the road. Consequently it was their policy to build in regions where competing lines were not for some years likely to be constructed, and where the tariffs could be kept at a remunerative figure. In this latter class, John M. Forbes was among the few foremost.

Successful as speculations though Forbes' railway undertakings were, this fact should not so occupy the foreground that his great qualities of imagination and leadership are not seen in their true proportion. Filled with the vision of a land made populous and rich through a means of transportation, as yet in its infancy, he was also endowed with the personal qualities which could help largely to bring that vision to pass. Furthermore, in the excitement of that era, he was among the few men who, by their coolness and resoluteness could command the confidence of others; thus, when the crash came and the land was strewn with wrecks of railways, his undertakings stood out, not only undamaged, but sounder than ever before.

RAILWAYS IN INDIA.

ARTHUR R. S. ROY, PH.D.*

They say in the Orient, "First comes the Bible, then the British and then the railways." All three generally come to stay. In India the three are working admirably.

India now possesses a vast railway system that stretches from Trichinopoly on the sea coast in the extreme south to the Khyber Pass in the further northern frontier among the high Himalayas; from Indus in the west to Brahmaputra in the east. And now the railway lines are penetrating the mountain fastnesses of Beluchistan to Quetta. They are also going down through wild country, through forests and over hills, southward beyond the Brahmaputra to meet the lines from Rangoon and Mandalay in Burmah. Between these furthest points the system has shot out many trunks and innumerable branches all over the great plains, connecting remote cities and industrial centers. All the chief cities of India are connected by railways. In fact they would not rank among the principal cities if they did not possess a railway station. Every year more towns and cities are entering the zone of the locomotive whistle, and the lines are breaking into new fields. The development is rapid.

The immense system is composed of six separate parts or nuclei working in harmony. They are: (1), the East Indian Railway (E. I. R.); (2), the Great Western Railway (G. W. R.); (3), the Great Indian Peninsular Railway (G. I. P. R.); (4), the Bengal Nagpur Railway (B. N. R.); (5), the North Western Railway (N. W. R.); (6), the Southern Indian Peninsular Railway (S. I. P. R.). Beside these six distinct branches, which cover practically all India, there are many smaller systems that serve the districts in the interiors and parts far away from the main trunk lines. The E. I. R., the oldest of the systems, covers the eastern parts with its terminus at Hawrah, a suburb of Calcutta. The G. W. R. has its headquarters in Bombay, which is the terminus of other lines as well. Nagpur is the central station of the B. N. R., which accommodates the public of the central provinces. The S. I. P. R. is focused at Madras on the east coast of the southern Indian peninsula. The names are a good guide to the regions each system supplies.

All these systems, forming one great unit, although nominally the enterprise of private companies, are heavily subsidized by the Indian government and are more or less under its control. This is almost a necessity, for the rails were primarily laid for the easier transportation of troops. Under such conditions there is no competition, and though the service is efficient it lacks the stimulus of competition.

In the native independent states, the railways are built, maintained and managed by the state treasuries. The officers and higher employees, even of the independent native states, railways are nearly all Europeans. The station master, the engine driver, and the guards are Europeans. The guards or conductors on some lines are Parois and Hindus, but only a very small number occupy this position. Perhaps in all India there is not one engine driver who is a native of the land, though there are many Indian station masters in small, out-of-the-way places, where, perhaps, only one passenger train stops in twenty-four hours. The clerks and telegraphers are mostly Indians. It is of course British policy to maintain such a personnel, for there are many efficient natives, well able to perform the duties of the various departments.

Each train for passenger service is made up of four classes: First class, second class, intermediate class and third class. The first and second classes are used by government officials and the wealthy. The intermediate is used by middle class Indians and the poorer Europeans. The third class is used almost exclusively by the Indian traveling public. In both the intermediate and third classes separate compartments are provided for Europeans and women.

The first and second classes are well furnished. The long seats are covered with leather and are soft and springy. At night they are used as sleeping bunks. In each compartment, and there are two in each car, are hung two hammocks for sleeping purposes. In the day time they are pushed up out of sight. Sometimes the inner walls of the compartments are fitted with folding bunks, such as one finds in the cabins of old-fashioned steamers. The first and second classes are invariably supplied with bathrooms, so that the traveler can enjoy the luxury of the tub. The water which is carried on the roof is replenished frequently at the larger stations. In summer the windows are fitted with rotating fans, that force moist, cooled air through dripping khus khus (a species of tall grass) mats. These luxuries are a necessity in the burning sun of the Indian plains. The intermediate and third classes are fitted with long bare wooden benches that stretch across the width of the car. Each compartment contains two such benches facing each other. The compartments, of which there are six in a car, are divided by long iron bars, and look for all the world like a traveling circus cage. Sometimes even the windows are barred. There is no kind of sleeping accommodation, and absolutely no pretense of comfort. The poor unfortunates, who are obliged to ride in these cages are huddled together like wild beasts. No Siberian transport carrying exiles could be much worse. Yes, the passengers do complain, but—

The track is broad gage; that is, 5 ft. gage. That is one reason why Indian cars look so heavy and cumbersome. But plenty of elbow room is required in that hot climate. The subway and Brooklyn Rapid Transit crushes would mean apoplexy and sudden death. It cannot be said, for all that, that Indian cars are luxurious and up to date. There is no competition, therefore the railway companies do not find themselves called on to furnish anything more than bare necessities. They still use those antediluvian gas lamps, dropped in at sunset from the roof. It is impossible to regulate their glare, generally the weary traveler pulls a green shade over it when he wants to sleep. Or just at the exciting part of a railway penny dreadful the gas gives out and the compartment is left in darkness. These are some of the inconveniences that the Indian traveler suffers. Yet, one must be thankful that there is a train at all.

Although there is not much fear of accidents, on the busiest lines, every train is fitted with vacuum brakes. A collision in India must partake of the nature of a phenomenon. Except at about a score of points not four trains run through in an hour. There are countless numbers of stations through which only one passenger train passes in twelve hours. However, the service is sufficient. It is not so very long ago that railway trains were regarded with fear, as something preternatural, by the ignorant peasantry of outlying districts. Today the fear is gone, still the train is viewed with much curiosity. To travel in a train is still a great achievement with untold thousands. The traveler will return to his village and, as the people gossip at the noon hour under the spreading banyan tree in the middle of the village, will relate his experiences as something of surpassing wonder; and his fellows will look up to him as one who has entered a field outside the realms of human labor and invention, and straightway he gains a prestige in the community; even a reputation for wisdom, as one who has ridden in a train and seen something of the vast world beyond the shades of the village roofs. These simple villagers call trains "howah garry," meaning "air carriages." How near they are to the truth these innocent hamleteers do not imagine!

The railway is undoubtedly one of the greatest blessings that has followed in the wake of the British occupation of India. Great cities have grown greater, and scores of insignificant towns have developed into centers of immense industries. Fertile lands difficult of access have been brought within the scope of profitable commerce. The farmers can sell their products more easily, and buy the conveniences the cities supply without much trouble. Employment is offered to thousands, who would other-

* Dr. Roy is not a practical American railway man, but he is a good observer, and makes a clear picture of what he has seen.

wise find it harder to live. Large tracts of country, hidden in oblivion for centuries are opened up for improvement. Bombay has been brought near to Calcutta and Delhi to Madras. That in itself is a great achievement, in a country where people seldom travel beyond the limits of their landlord's territory; where the next village, a few miles away, is too far to reach in a lifetime. Good government is made possible, something utterly beyond the imagination in India without easy and rapid modes of transit, for it is a country half the size of America with a population nearly three times as great. But above all, the railway has helped to circulate common ideas, new ones, from village to village, from city to city, from east to west and north to south. What that means to and for India no one who has not lived in India and studied Indian life will be able to realize. No country in the world, not even China, has such a heterogeneous population, with heterogeneous creeds, beliefs, ideas, ideals and languages as India. The railway has made possible a common standard of civilization in India, and is knitting together three hundred million individuals into one compact mass of humanity with a potential energy for good or bad that no imagination has yet dreamed of calculating. What greater work can any human invention do in any clime?

A TALE OF TWO RAILWAYS.

In Connecticut more than 60 years ago there were opened for operation two railways that were almost the pioneer lines of the state. The Housatonic was chartered in 1836 and opened in 1840. The Naugatuck was chartered in 1845 and opened in 1849. Each line had its southern terminal at tide water at Bridgeport, Conn., now the second largest city in the state. The Housatonic line reached northward to the Massachusetts border, 74 miles as referred to in the old railway reports; the Naugatuck to Winsted, Conn., 57 miles. The Housatonic, in days when water power was the fundamental unit of factory growth, ran through the valley of the same name, drained by a large, swift river, navigable near its mouth and, in its mid and upper waters, supplying almost unlimited water power not seriously affected by summer drouth in those days of the unshaven forests. The Naugatuck had its water power valley too, but shorter, drained by a much smaller stream, sometimes running almost dry in hot weather. The two parallel valleys are much alike in situation. But the Housatonic railway line, in its priority of time, its larger distance, its later extension northward to Pittsfield, Mass., and its superior water power, had by far the best outlook for prosperity.

Both these sub-pioneer lines of New England and Connecticut are now merged in the New Haven system and, save locally, have lost even their names. They have no separate reports, so it is impossible to point out in dollars and cents the strange disparity in their annals of success and the reverse. It is a subject to which, in these columns, we called attention some seven years ago, using necessarily a test based on the Federal census of 1900, showing the remarkable difference in the growth of the two valleys and the townships in them tapped by the two lines. The new Federal census (1910) for Connecticut towns enabled us now to show that difference in fresh and more vivid colors.

The Housatonic line was opened, as stated, in 1840. Using the census of that year the annexed table shows the change during 70 years in the population of the intersected towns of the state, leaving out Bridgeport, the terminal of both lines:

TOWNS SERVED BY THE HOUSATONIC.

	Population. 1840.	Population. 1910.
Trumbull	1,204	1,642
Monroe	1,351	1,002
Newtown	3,189	3,012
Brookfield	1,255	1,101
New Milford	3,974	5,010
Kent	1,759	1,122
Cornwall	1,703	1,016
Canaan	2,166	2,873
Total	16,601	16,778

In the table the town of Canaan includes North Canaan, set

off from the parent township in 1858. The table, which happens to be made up of country towns, indicates how a railway in itself may not develop a rural region.

Contrast with the Housatonic valley in the state the development of the contiguous Naugatuck, opened in 1849, during a period ten years less:

TOWNS SERVED BY THE NAUGATUCK.

	Population. 1850.	Population. 1910.
Stratford	2,040	3,657
Milford	2,465	4,366
Orange	1,476	11,272
Derby	3,824	24,143
Seymour	1,677	4,786
Naugatuck	1,720	12,722
Waterbury	5,137	73,141
Litchfield	3,953	3,686
Torrington	1,916	16,840
Winchester	2,179	8,679
Plymouth	2,568	8,554
Total	28,955	171,846

In this table the township of Derby is credited with the population of the urban township of Ansonia, set off from her in 1889; Litchfield with the town of Morris, set off in 1859; and Plymouth with the town of Thomaston, set off in 1875. The census return for Stratford in 1910 is missing, and that for the census of 1900 is substituted; moreover, its increase of population, as well as those of Milford and Orange, has been connected with the New Haven rather than the Naugatuck railway. But the contrast between the Housatonic and the Naugatuck railway annals remains amazing in its disparities. Taking the returns as they stand with both time and original physical advantages in favor of the Housatonic valley, it continues stationary; while the Naugatuck has waxed about fivefold, or 494 per cent. Again, in the case of the Naugatuck such increments as those of the towns of Waterbury, Naugatuck, Plymouth, Torrington and Winchester—from 13,520 to 119,936—are remote from that tidewater toward which New England factory enterprise is commonly assumed to drift.

In the case of the two valley regions, each with its early railway and peopled by similar races, the causes of the contrasted degrees of development are, in a measure, involved in mystery. But there are some clues. The Housatonic line in its early days was the victim of narrow and unenterprising management. Its rates were inordinately high, almost prohibitory, its equipment of the poorest, its road bed and rails likewise, its improvements slow. By comparison, while not absolutely exalted in the railway scale, the Naugatuck started better and was managed better. It was paying dividends when the Housatonic line was on the verge of bankruptcy. But it and its region owed their prosperity and growth more to what seems to have been the good fortune that took to the Naugatuck valley a small but able body of manufacturers, pioneers in metallic industries. From their first ventures others sprung, reached from one township to another on the line and built up centres of population that begot diversified industries. The lesson reaches the original values of good railway management at its beginning; a certain specific value in railway policy of that element prized in mercantile life as "good will," throws a shadow on the "tidewater" argument, and shows how the first factory on a line may be the starting point and nucleus of many. In the story of the two roads it may also be worth remark that while public regulation had nothing to do with the backwardness of the one, the high prosperity of the other (and of its patrons) was built up without it—and, lastly, that we may learn things from the history of short lines as well as from big railway systems.

The construction of another link in the proposed Pan-American Transcontinental Railroad has been commenced in Uruguay. This part of the road is known as the Durazno-Trinidad branch. It will run from Durazno, which is the center of a rich agricultural district of Uruguay, to Conolia, on the River Plate, and from thence about 350 miles to San Luis in the province of Rivera on the Brazilian frontier. From that point the road will continue to Bage, Brazil, which already is connected with the railway that eventually will reach Rio de Janeiro.

General News Section.

The Denver & Rio Grande has increased the pay of its locomotive enginemen about 9 per cent., and has also issued revised working rules more satisfactory to the employees.

The new ore handling plant of the Erie Railroad at North Randall, near Cleveland, was damaged by dynamite on the night of March 25 to the extent of \$100,000. There is no clue to the persons who did the deed.

At Douai, France, March 23, Louis Breguet carried in his aeroplane 12 passengers; and at Mouzan on the following day, Roger Sommers carried 13 persons, weighing 1,430 lbs. Breguet flew two miles, and Sommer two-thirds of a mile.

The Northern Pacific and the Spokane, Portland & Seattle have given their despatchers, trainmasters and roadmasters an advance of 10 per cent. in their wages, effective March 1. It is expected that the other railways in the northwest will do likewise, and that about 2,000 men will be affected. Despatchers formerly receiving \$140 are raised to \$175; chief despatchers from \$175 to \$190; night chiefs from \$150 to \$165; trainmasters from \$175 to \$190, and district roadmaster from \$140 to \$155.

The largest locomotive in the world has recently been built by the Atchison, Topeka & Santa Fe in its Topeka shops. This locomotive is a Mallet compound, with a rigid boiler, and is equipped with superheater, reheater and feed water heater. It is of the 2-10-10-2 type, the tender having two six-wheel trucks. The over-all length of the engine and tender is 121 ft. 7 in., and it weighs approximately 750,000 lbs. It carries a boiler pressure of 225 lbs., and will be put in service on the mountain grades in Arizona.

A northbound passenger train on the St. Louis, Iron Mountain & Southern was stopped by six robbers near Coffeyville, Kan., March 25, and the safe in the express car was blown open. It is thought that the amount of money taken was about \$500. The place where the train was stopped was about three miles from any habitation and the robbers spent nearly an hour in assorting the packages found in the safe. The passengers were not disturbed, but bullets were fired along the sides of the train to intimidate them.

The Lehigh Valley has increased the pay of between 2,500 and 3,000 trainmen, the increase to go into effect on April 1. Freight flagmen's pay will be increased from \$2.30 to \$2.52½ a day, and freight trainmen's from \$2.30 to \$2.42. In passenger service trainmen will be advanced from \$2.35 to \$2.45, and baggage men from \$2.45 to \$2.65. In yard service day conductors who now get \$3.30 will receive \$3.50, and night conductors who get \$3.40 will receive \$3.70. The day yard trainmen will be advanced from \$2.90 to \$3.20, and the night men from \$3 to \$3.40. The increase averages from 6 to 10 per cent.

The working time of most of the men in the shops of the Pennsylvania has been reduced from 55 hours a week to 45. This order affects about 12,000 men. At Pittsburgh some of the shopmen are temporarily laid off. The shops of the Missouri, Kansas & Texas at Sedalia were closed for the last five days in March because the month's appropriation had been used up. At the shops of the Southern Pacific in Sacramento, the working time has been reduced to eight hours a day and five days a week. The shops of the Chicago & Alton at Bloomington, closed a short time ago, were re-opened this week.

The assertion that the United States has no merchant marine is false. We have no ships in foreign trade, but in our domestic trade we have great fleets. The merchant marine fleets of Germany, France and Norway, Continental Europe's three great maritime nations, aggregate in gross tonnage only 6,829,496, whereas the fleet of the United States has a gross tonnage of 7,508,082 tons, or 678,586 tons more. The merchant marine fleets of ten other countries of Continental Europe—Russia, Sweden, Denmark, Holland, Belgium, Greece, Spain, Portugal, Italy and Austria-Hungary—put into one fleet, aggregate only 6,514,155 tons, nearly one million tons less than the merchant marine of the United States.—*International Marine Engineering.*

B. F. Yoakum, of the St. Louis & San Francisco, finds that in the southwest the legislatures have shown a better spirit toward

railways. In Texas the legislature has adjourned without passing a single railway bill, for the first time in fifteen years. The Missouri legislature passed only one railway bill of importance, and that one not so injurious that it cannot be endured. The Arkansas legislature so far has done nothing antagonistic to the railways and does not seem disposed to do so at this session. The only railway legislation of importance in Oklahoma was a joint resolution to submit to the people of the state the question of changing their constitution, which now forbids any railway outside of Oklahoma to build or acquire a road in the state.

C. S. Clarke, first vice-president of the Missouri Pacific, says that repeated rumors as to his ill-health and intended retirement are misleading and without foundation, and he has given publicity to a memorandum of what he said to the board of directors at New York on March 21, on the occasion of his re-election as first vice-president. He told the directors that as it was their wish that for the present he should continue as resident executive at St. Louis he felt it to be his duty to comply, and until such time as they could perfect an executive organization he would give his best efforts to holding the present organization together. He said that for more than six months his resignation had been in the hands of the chairman of the executive committee, as George J. Gould knew, and that he had hoped to be relieved so that he could give time and consideration to important personal business which had had but little of his attention during the last six years.

Tipping the Conductor.

On the street railways of Prague, Austria, the conductors expect and usually receive from each passenger a tip of two hellers, which amounts to one-fifth of a cent. The amount realized in this manner doubtless amounts to about as much as the conductor's regular compensation.—*Consular Report.*

Products of Wood Distillation.

The value of wood distilled in the United States in the year 1909, according to a bulletin issued by the Department of Commerce and Labor, was \$4,000,000, and the products of distillation were valued at \$8,328,484. More than nine-tenths of the wood used was hard wood, and the products were charcoal, crude alcohol and gray acetate; charcoal, 53,075,102 bushels; alcohol, 8,468,083 gallons; gray acetate, 149 million pounds. The products of the soft wood were turpentine, 682,702 gallons; charcoal, 2,403,401 bushels, and tar, 1,364,984 gallons.

Valuation of Harriman Lines.

A thorough investigation of the probable cost of reproducing the Harriman Lines is being made under the direction of E. Holbrook, formerly chief engineer of the Central of Georgia. This action was suggested by the widespread agitation for physical valuation of railways and by the fact that in numerous rate cases the Harriman Lines and other roads have been called on to give estimates of the value of their physical properties. The work has been under way for some time and it will take several months more before it is finished. The valuation will include all of the railway properties.

Governors as Traffic Solicitors.

No G. P. A. ever missed a good thing because he was so modest that he did not dare to ask for it. A new illustration of this trite truth has been brought to our attention in the shape of two proclamations which have been issued, one by Governor Oswald West of Oregon, and the other by Governor M. E. Hay of Washington, each setting apart a day to be called Colonist Day, and each exhorting all citizens to write to their friends in the East and remind them that ticket agents throughout the United States would, for a short time, sell them reduced rate tickets to enable them to visit that highly favored section of the country. We are informed by an officer of one of the Oregon roads that as a result of the proclamation, hundreds of thousands of letters were written to eastern friends. One of

the proclamations says that by virtue of the reduced rates offered by the railways it is possible for home seekers to get out there "at a trifling cost." To farmers who seldom see a ten-dollar bill this may seem rather an extreme statement. However, there can be no question that any farmer who accepted the invitation of one or both of these governors found himself amply repaid for his expenditure of time and money.

Six Passengers Killed at Alapaha, Ga.

By the derailment of train No. 95, the Dixie Flyer, of the Atlantic Coast Line, southbound, on a trestle bridge near Alapaha, Ga., on the morning of March 25, about 7 o'clock, six passengers and four trainmen were killed, and nine passengers and one express messenger were injured. Some of the victims were drowned, the first and second-class coaches and one sleeping car falling through the bridge into the Alapaha river. A statement from the office of the general superintendent of the road says that the derailment was caused by the breaking of a driving wheel axle. The trestle was destroyed for a length of about 400 ft. Alapaha is between Albany and Waycross. The Dixie Flyer runs through from Chicago to Jacksonville.

Mine Rescue Car.

The Mine Rescue Station Commission of Illinois, organized last August, has made its first report to the governor of the state. The chairman of the commission is J. A. Holmes, of Washington, D. C., representing the Federal Bureau of Mines, but all the other six members are Illinois men, representatives of the mine workers, the mine operators and the mine inspectors; and the seventh member, H. H. Stoek, who is the secretary, represents the mining department of the University of Illinois.

The commission is going to establish three rescue stations, and it will have three rescue cars. One of these cars is described in the report. It is a converted sleeping car, having been bought from the Pullman Company for \$750. About half of the car is occupied by six sleeping sections and the rest by a kitchen, an office and a general room containing the apparatus, the principal features of which are oxygen tanks and other first-aid supplies. The second of the three cars was contributed by the Chicago, Milwaukee & St. Paul, and the third by the Chicago & North Western.

Extension of University of Illinois Commercial Courses.

The trustees of the University of Illinois have recommended the appropriation of \$150,000 for a building to be used by the department of business administration, and the legislature has also been asked to increase the appropriation for business courses from \$25,000 to \$50,000 a year. The railway officers who visited the University last November (See *Railway Age Gazette*, November 18, 1910,) expressed their approval of the scope of the training and the quality of work that is being accomplished in the course in railway administration. The business courses have gained steadily in number of students since 1901, when they were first offered. There are now 774 registrations in this department and 180 are enrolled for the four-year courses. The facilities offered for these classes are wholly inadequate for present needs. In the work in railway administration additional library equipment is needed, and space should be provided for the filing of railway tariffs and reports.

The Grand Trunk Pacific.

The Grand Trunk Pacific has let contracts for the construction of 885 miles of line to be built this year. These contracts provide that the main line, which is now in operation to Edson, Alberta, 130 miles west of Edmonton, shall be extended west 265 miles farther; and for the building of branch lines aggregating 620 miles. The total estimated expenditures, aggregating \$17,000,000, will also include the grading of additional branch lines to the extent of 200 miles. The company now has in operation west of Fort William, 1,217 miles of main line and about 500 miles of branches. The Canadian Government officers estimate that the Grand Trunk Pacific has spent \$18,765,000 on its mountain section, of which \$11,765,000 was advanced by the government on its guarantee. On the prairie section the expenditure to date is \$34,463,000, the government guarantee being

\$10,735,000 of that amount, and government loan, \$10,000,000, making total sums advanced to the company, \$32,496,000. The company has expended \$14,744,000 on rolling stock.

Meals Served in "Family Style."

The *Northwestern Employees' Magazine* for March describes a combined dining and observation car, which has been in use on the Chicago & North Western, on the Sioux City division, for the last 16 months, and which is operated by C. W. Garnier and his wife. This car is run on Chicago trains Nos. 17 and 20. From 30 to 40 persons take meals in it daily. Mrs. Garnier is the waitress, and Mr. Garnier is conductor and assistant waiter. Eighteen persons can be seated at one time. The chief cook had served six years in that position on the Canadian Pacific before going to the North Western.

According to a press despatch the Copper River & Northwestern is now running a dining car between Cordova and interior points in Alaska—the first dining car ever run in that northern region. The car was converted from a passenger car. Like the car on the Chicago & North Western, this one is managed by a man and his wife, with a cook and an assistant cook; a fashion which would seem to justify the title which we have put at the head of this item.

Easy Passes in Texas.

The anti-pass act passed by the Texas legislature at its recent session will be permitted by Governor Colquitt to go into effect without his formal approval. The governor objected to the measure, because it is so worded as to permit free transportation to be given to a wide variety of persons. In fact, the legislators might very properly be charged by the "common people" with unfair discrimination, inasmuch as it has authorized free transportation to be given to almost all classes of persons except the "common people." A list of the classes of persons to whom under this "anti-pass" law transportation may be given fills a newspaper column and includes such persons as state railway commissioners, peace officers, representatives of industrial fairs, farmers' congresses and farmers' unions, deputy sheriffs, United States marshals, deputy United States marshals, volunteer firemen and confederate veterans, the state game, fish and oyster commissioner and his two chief deputies, state and county health officers, government representatives accompanying fish for free distribution in the streams of the state, the pure food commissioner and two chief deputies, persons who have been instrumental in securing the passage by the United States Congress of statutes providing for the equipment of railway trains with safety appliances, constables, members of the state militia in uniform when called into service, and members of the live stock sanitary commission, or other inspectors in Texas, not exceeding 25 in number. The act specifically provides for the exchange of free transportation and for advertising in newspapers and magazines, the said exchange to be on the basis of value received in all cases and the contracts to be approved by the railway commission. The Texas legislature has for some years been very stringent in restricting the amount of revenue that the railways might receive for the services that they rendered, but it has no conscientious scruples at all, apparently, about allowing them to give their services free to all classes of persons except the aforesaid "common people."

I. C. C. and Funerals.

'Give the efficiency engineers half a chance and they will simply overwhelm you with facts and figures, the truth and practical utility of which no man in his senses will attempt to gainsay. The real problem for the manager today is not how to run his business upon the most economical and scientific principles, but how to run it at all. Some people have an idea that the government can regulate the other side of the problem, collective labor, in the same way that the manager and capital can be regulated. A greater delusion never existed. The levelling process in modern industry, the blocking of individual initiative and the elimination of personal responsibility are beyond the reach of human laws.

Every railway in the country is honey-combed with illustrations of the impediments that are thrown in the way of any management at all by the schedule and the government regulator. Take the regulations in regard to the hours of labor. Time was when

if I wanted to get off duty for some urgent personal reason I could, with the permission of the superintendent, call upon one of the other men to help me out. For twenty-five years I watched this method of handling the men in a human and scientific manner and never knew it to be abused.

Today if you want to change shifts with another man in order to go to a funeral you will be referred to the Interstate Commerce Commission; no man can exceed his time limit of nine hours except in case of emergency, and according to the ruling you cannot plead emergency for anything that you can foresee. When a man is dead you can easily foresee the funeral. Therefore the only funeral a towerman can go to is his own. Of course if there happens to be a spare man handy you can get away by losing a day's pay; but what becomes of scientific management and economy in such cases from the employee's point of view?—*J. O. Fagan.*

Q. & C. Firemen's Strike Settled.

The Cincinnati, New Orleans & Texas Pacific (Queen & Crescent route) raised its freight embargo March 23, having succeeded in doing away with most or all of the congestion, and on March 25 an agreement was reached with the strikers, through the mediation of Judge Knapp, and the strike was declared off. Following is the agreement, which was signed by General Manager Baker of the railway company and Messrs. Teat, Payne and others for the firemen:

- (1) The pending strike to be declared off at once.
- (2) The employees in the service of the C., N., O. & T. P. Railway Company on March 9, 1911, who struck on that day, to be reinstated within fifteen days under the provisions of the schedule of July 1, 1910, governing rates of pay and conditions of service, which schedule shall continue in effect, with their former seniority standing and rights and without prejudice on the part of the company, except that the company shall not be obliged to retain in service any fireman or other employee against whom charges shall be made within thirty days from the date hereof, and who shall be found, upon investigation, to have committed acts of violence or been guilty of misconduct during or in connection with the strike which would justify his discharge or suspension.
- (3) Negro firemen not to be employed on any part of the company's line north of Oakdale, provided a sufficient number of competent white men can be secured.
- (4) On the district between Oakdale and Chattanooga, known as the third district, the percentage of colored firemen hereafter employed not to exceed the percentage in service on January 1, 1911, provided a sufficient number of competent white men can be secured.
- (5) Negro firemen on this district not to be assigned to more than one-half of the passenger runs, nor to more than one-half of the preferred freight runs, and in no case to be assigned to passenger or preferred freight runs unless entitled thereto by seniority and fitness for such service.
- (6) In case any question shall arise as to the meaning or application of this agreement which the parties cannot settle among themselves, either party may appeal to Judge Martin A. Knapp, of Washington, and his decision shall be final and binding upon both parties.

Railway Regulation and Efficiency.

The Interstate Commerce Commission has handed down its decisions on the proposed increases in freight rates. I think three things may be affirmed about these decisions:

First.—They have put at least one brake upon higher costs in this country.

Second.—They have put another brake upon voluntary reductions of rates because, under the new law and these decisions, the burden of proof for future increases or restorations is upon railways.

Third.—The present law amply protects the shippers of this country against extortionate rates. America has already the lowest rates and the highest wages in the world and apparently is to retain both.

I made no predictions before the decisions were rendered; I make none now as to their ultimate effect. There is one bright and shining sentence in them, to wit: "Our railway management should have wide latitude for experiment; it should have

such encouragement as will attract the imagination of both the engineer and the investor." The response which the country will, in the long run, give to this sentiment is the important and far-reaching answer. The crop of short-term railway notes now coming out would indicate that the country's "imagination" is still a little near-sighted, but it may get over that and we hope it will. We hope the Interstate Commerce Commission is right. Some phases of the decisions might have been appealed to the newly created Interstate Commerce Court, but the railways have accepted the verdict of the commission and are going ahead to do the best they can. They look forward, not backward.

During the discussion a new slogan—*Efficiency*—has captured the country. . . . I read in the *Sun* one day last week that the average cost of a cold in the head is \$44.34. What a railway official wants to know is this: If his company can reduce the cost of the cold in its head from \$44.34 to \$37.34, *who will get the seven dollars?* . . .

It is particularly appropriate at a Canadian club dinner that we look at Canada. As I understand it, your form of government is in one respect just the opposite of ours, viz., your Dominion government has all the powers not granted to the provinces, while our states have all the powers not ceded to the federal government. What has that to do, you say, with railways? This: When our United States roads fall ill from their own indiscretions or otherwise, 47 doctors step in—that is, 46 states and the federal government—whereas under your form of government a railway chartered by the Dominion is regulated by the federal government only. See the enormous loss in efficiency and the great strain on the patient under our methods as compared with yours. This winter there have been introduced in the state legislatures of the United States 469 bills affecting the mere operating questions of railways, besides scores of other bills affecting railways in a multitude of ways. Of the 469 bills, 56 are so-called "full crew" bills, each of which, if enforced, will add to the railways' cost of living. . . .

Railways in England are permitted to work out *joint* economies. France is districted off and wasteful duplication of railway service is absolutely eliminated. Each company has a monopoly in its district. One French railway corporation pays dividends of 18 per cent. a year on its stock; the others pay 7 per cent. or more. And out of their revenues an amortization or sinking fund is also paid to the owners under which the republic will become the proprietor of the railways about the middle of this century. . . .

If any of your methods as to government, or banking, or labor questions, or railways, are better than ours, perhaps we will be wise enough to borrow some of them. While we are depending upon the imagination of the investor for railway development, you are right now engaged in what is practically a profit-sharing arrangement with the investors in your railways. If the option to take out a federal charter for a railway is good for you, perhaps such an option will be good for us. Maximum efficiency will require us, sooner or later, to eliminate all burdens on interstate commerce. We will learn to say, "The United States is a nation," not "The United States *are* a nation." The Brandeis idea is right. What we need is more efficiency. Let every man apply it in the activities of his own life, and let all of us together adopt it on a wider and wider scale—and incidentally use it to augment international trade. The more we study efficiency, the more we will discover that the Interstate Commerce Law amply protects the country against extortionate rates and discriminations. The anti-trust laws, at least so far as railways are concerned, involve an appalling waste of energy. We do not need both laws for the railways any more than a state needs two governors. Maximum efficiency entitles the people to have the commerce of this great country sent over the lines of least resistance. Duplication of train service, wasteful car supply, unnecessary hauls of empty cars, duplication of capital, and all that sort of thing ought to be cut out. If this could be done I have no doubt that one hundred million dollars a year could be saved in the operation of American railways with which to tempt "the imagination of both the engineer and of the investor."

In efficiency, American railways have been pioneers, not laggards. All things considered, they already are the most efficient in the world, and if "scientific management" of the anti-trust laws could be adopted, our railways would excite the admiration of even our own countrymen. Let us drop the old quo-

tation: "In time of peace prepare for war," and in its stead say to our neighbors, "In time of friendship let us prepare for more friendship." In time of efficiency prepare for more efficiency. More abundance for the many. Let things be cheaper—and men, women, and children more valuable. The welfare of our race, and therefore the welfare of all races, is bound up in the one word, *Efficiency*.—Frank Trumbull, before the Canadian Club of New York.

Foundrymen's Conventions.

The annual conventions of the American Foundrymen's Association, the American Brass Founders' Association and the Associated Foundry Foremen, will take place May 23-26, 1911, at Pittsburgh, Pa. The secretary and treasurer of the American Foundrymen's Association is Dr. Richard Moldenke, Watchung, N. J.; the secretary and treasurer of the American Brass Founders' Association is W. M. Corse, care Lumen Bearing Company, Buffalo, N. Y., and the secretary and treasurer of the Associated Foundry Foremen is Hugh McPhee, Tarrytown, N. Y. At the joint session at 10 a. m. on May 23 papers will be read on Production, Cost and Economy Foundry Insurance. At the session of the American Foundrymen's Association at 2 p. m. on May 23, papers will be read on the Use of Borings in Cupolas and the Effect of Alloys in Cast Iron. At the session of the American Brass Founders' Association at 2 p. m. on the same day papers will be read on Vanadium in Non-Ferrous Alloys and on the Determination of Nickel in Bronzes. At the joint session at 9:30 a. m. on May 24, papers will be read on Rotary Blowers and on Pattern Making. At the session of American Foundrymen's Association at 2 p. m. on May 24 papers will be read on Acid and Basic Open Hearth Pressures; on Electric and Converter Furnaces for Steel Castings, and on the Effect of Vanadium and Titanium on Steel. At the session of the American Brass Founders' Association at 2 p. m. on the same day papers will be read on the Corrosion of Brass Foundry Products and on Non-Ferrous Foundry Economies. At the joint session at 9:30 a. m. on May 25 papers will be read on the Use of Alloys and on Shot in Castings.

Chicago Signal Club.

The Chicago Signal Club held a meeting on Monday, March 27, at Room 402 Plymouth building, Chicago. E. F. Bliss of the signal department of the General Electric Company, gave an illustrated talk on alternating current signaling with special reference to the General Electric wireless controlled system. Leon S. Brach of the L. S. Brach Supply Company gave a talk on lightning arresters, explaining the theory of the air-gap and non-air gap types as applied to the operation of signal circuits. The club has been studying electric interlocking during the past few months, and at the next meeting, which will be held on April 10, various indication schemes will be taken up.

MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

- AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass.; annual convention, May 23-26, Chicago.
- AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Scranton, Pa.; next meeting, June 22, 1911, Niagara Falls, N. Y.
- AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—C. M. Burt, Boston, Mass.; next meeting, St. Paul, Minn., Sept. 19, 1911.
- AMERICAN ASSOCIATION OF LOCAL FREIGHT AGENTS.—R. O. Wells, East St. Louis, Mo.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—O. G. Fetter, Carew building, Cincinnati, Ohio; 3d Friday of March and September.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.—H. C. Donecker, 29 W. 39th St., New York.
- AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 24 Park Place, New York; May 17, New York.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago; Oct. 17-19, 1911, St. Louis, Mo.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, Monadnock building, Chicago.
- AMERICAN RAILWAY INDUSTRIAL ASSOCIATION.—G. L. Stewart, St. L. S. W. Ry., St. Louis, Mo.; May 9, 1911, Detroit, Mich.
- AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago; June 14-16, 1911, Atlantic City, N. J.
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—O. T. Harroun, Bloomington, Ill.
- AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., New York; 1st and 3d Wednesdays, except June and August, New York.
- AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—D. J. Haner, 13 Park Row, New York; 3d Tuesday of each month, New York.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York; next convention, May 30-June 2, Pittsburgh, Pa.
- ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago; April 26, 1911, New Orleans, La.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.—J. R. McSherry, C. & E. I., Chicago; May, 1911, Montreal, Can.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W. Ry., Chicago; semi-annual, June 16-17, Washington, D. C.; annual, November 6-10, Chicago.
- ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 135 Adams St., Chicago; June 19, 1911, Boston, Mass.
- ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 24 Park Place, New York; June 20-21, 1911, Cape May City, N. J.
- CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 1st Tuesday in month, except June, July and Aug., Montreal.
- CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursdays, Montreal.
- CAR FOREMAN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month; annual, October 9, Chicago.
- CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Friday in January, March, May, Sept. and Nov.; Buffalo, N. Y.
- CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—D. F. Jurgensen, 116 Winter St., St. Paul, Minn.; 2d Monday, except June, July and Aug., St. Paul.
- ENGINEERS' SOCIETY OF PENNSYLVANIA.—E. R. Dasher, Box 704, Harrisburg, Pa.; 1st Monday after 2d Saturday, Harrisburg, Pa.
- ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. K. Hiles, 803 Fulton building, Pittsburgh; 1st and 3d Tuesday, Pittsburgh, Pa.
- FREIGHT CLAIM ASSOCIATION.—Waren P. Taylor, Richmond, Va.; June 21, St. Paul, Minn.
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—H. D. Judson, 209 East Adams St., Chicago; Wednesday preceding 3d Thursday, Chicago; annual, July 29, Chicago.
- INDIANAPOLIS RAILWAY AND MECHANICAL CLUB.—B. S. Downey, C. & H. & D., Indianapolis, Ind.
- INTERNATIONAL MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York; next convention, Omaha, Neb.
- INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, rue de Louvain, 11 Brussels; 1915, Berlin.
- INTERNATIONAL RAILWAY FUEL ASSOCIATION.—D. B. Sebastian, La Salle St. Station, Chicago; May 15-18, 1911, Chattanooga, Tenn.
- INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—L. H. Bryan, D. & I. R. Ry., Two Harbors, Minn.; next convention July 25-27, Chicago.
- INTERNATIONAL RAILWAY MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, Lima, Ohio.
- IOWA RAILWAY CLUB.—W. B. Harrison, Union Station, Des Moines, Ia.; 2d Friday in month, except July and August, Des Moines.
- MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago; June 19-21, 1911, Atlantic City, N. J.
- MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION, OF UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass.; Sept. 12-15, 1911, Atlantic City, N. J.
- NEW ENGLAND RAILROAD CLUB.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept., Boston.
- NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August, New York.
- NORTHERN RAILWAY CLUB.—C. L. Kennedy, C. & M. & St. P.; 4th Saturday, Richmond, Va.; 20th annual, June 21, 1911, St. Paul, Minn.
- OMAHA RAILWAY CLUB.—A. H. Christiansen, Barker Bldg.; second Wed.
- RAILWAY CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month, Kansas City.
- RAILWAY CLUB OF PITTSBURGH.—C. W. Alleman, P. & L. E., Pittsburgh, Pa.; 4th Friday in month, except June, July and August, Pittsburgh.
- RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Bethlehem, Pa.; June 13, New York; annual, Oct. 10, Colorado Springs, Colo.
- RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio; annual, May 22-24, 1911, Milwaukee, Wis.
- RICHMOND RAILROAD CLUB.—F. O. Robinson, Richmond, Va.; 2d Monday, except June, July and August.
- ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—Walter E. Emery, P. & P. U. Ry., Peoria, Ill.; Oct., 1911, St. Louis.
- ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug., St. Louis; annual, Oct. 20, Atlanta.
- SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Nyquist, La Salle St. Station, Chicago; Sept. 12-14, St. Paul, Minn.
- SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. Ry., Montgomery, Ala.; semi-annual, April 20, Atlanta, Ga.
- SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Prudential bldg., Atlanta, Ga.; 3d Thurs., Jan., April, August and Nov., Atlanta.
- TOLEDO TRANSPORTATION CLUB.—L. G. Macomber, Woolson Spice Co., Toledo, Ohio; 1st Saturday; annual, May 6, 1911, Toledo.
- TRAFFIC CLUB OF CHICAGO.—Guy S. McCabe, La Salle Hotel, Chicago; meetings monthly, Chicago.
- TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August, New York.
- TRAFFIC CLUB OF PITTSBURGH.—T. J. Walters, Oliver building, Pittsburgh, Pa.; meetings monthly, Pittsburgh.
- TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7042 Stewart Ave., Chicago; annual, June 20, 1911, Baltimore, Md.
- TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; 1st Sat. after 1st Wed.; annual, Dec. 11, 1911.
- TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, L. S. & M. S. Ry., Detroit, Mich.; annual, Feb. 10, 1912.
- TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y.; annual, August, 1911, Chicago.
- WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man.; 2d Monday, except June, July and August; annual, May 8, Winnipeg.
- WESTERN RAILWAY CLUB.—J. W. Taylor, Old Colony building, Chicago; 3d Tuesday of each month, except June, July and August.
- WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago; 1st Wednesday in month except July and August, Chicago.
- WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, First National Bank bldg., Chicago.

Traffic News.

The railway men and industrial traffic managers of Dallas, Texas, are planning to organize a traffic club.

The Lehigh Valley has offered to the farmers along its lines in New York state, the use of land on its right-of-way, where available, for the cultivation of alfalfa.

At the annual meeting on March 28 of the Traffic Club of Chicago, the officers named by nominating committee were elected for ensuing year, as published in these columns March 10, page 471.

The Norfolk & Western has notified the Interstate Commerce Commission that, beginning April 1, it proposes to base its rates for carrying bituminous coal on tons of 2,000 lbs. each, instead of 2,240 lbs. as at present; in effect, an increase of 12 per cent. in the rates.

The North German Lloyd steamship "George Washington," which sailed from New York this week, took to Europe 2,710 passengers; all of the cabin accommodations having been engaged several weeks ago. New York steamship men say that the number of passengers booked for Europe to sail in the month of April indicates that the eastward movement across the Atlantic in that month will exceed any previous record.

Representatives of railways carrying coke from Pennsylvania and Virginia to western states, met in New York this week and discussed a proposed revision of tariffs. At present the rate to Chicago is \$2.35 a ton on coke to be used in blast furnaces and \$2.65 on coke for other uses. Following the rule laid down in a recent decision of the Interstate Commerce Commission, that differences in rates based on the uses to which goods are to be applied are illegal, it is proposed to make a single rate for all coke of \$2.50.

Edgar J. Rich, general solicitor of the Boston & Maine Railroad, appearing before the Senate Committee on Judiciary of New Hampshire, asked, because of the lack of action on the part of the special committee which has been investigating railway rates in the state, that the present rates be legalized until July 1, 1913, and that in the meantime the Public Service Commission be instructed to make a full investigation of the subject and report to the next legislature. During this investigation he would give shippers the right to appeal to the commission for a determination of the reasonableness of their rates and give the railway the right to appeal to the courts if not satisfied with the findings of the commission.

The following have been chosen to represent their respective clubs at the meeting, to be held in Cincinnati, Ohio, on April 3, for the purpose of forming a national organization of traffic and transportation clubs: G. C. Brown and C. H. Chevee, Buffalo Transportation Club; Carl K. Landes and C. C. Spalding, Cincinnati Transportation Club; W. R. Hurley and Walter G. Norvell, Detroit Transportation Club; Wallace A. McGowan and James L. Marens, Kansas City Railroad Club; W. H. Simmons and B. T. Breckenridge, Indianapolis Transportation Club; Charles Milbauer and B. R. Price, Newark (N. J.) Traffic Club; F. A. Bedford and V. C. Williams, Philadelphia Traffic Club; Thomas Conlon and L. G. Macomber, Toledo Transportation Club; Odell S. Smith and S. L. Heacock, Washington (D. C.) Traffic Club.

Railway Legislation in Missouri.

Laws containing the following provisions affecting railways were passed by the legislature of Missouri at its recent session:

Making it unlawful for any railway to charge a higher rate for transporting passengers between any two points on its lines than it charges between any other two points.

Giving the right to sue a railway company and its responsible employee jointly for damages in any accident, the purpose being to keep damage suit cases in the state courts.

Authorizing the railway commission to fix the maximum rates for passenger travel within the state. The commission is authorized to divide the state's railways into three classes, those whose gross passenger earnings are more than \$1,500 a mile a year, those which earn more than \$750 a mile, and those which earn less than that sum. The maximum rates may be varied according to this classification.

Requiring railways to install local exchange telephones and answer inquiries as to trains.

Permitting the railway commission to compel railways to place gates, automatic alarm bells or other mechanical devices, or a flagman at any grade crossing where it thinks it necessary.

Preventing railway or express companies from limiting liability by any contract whatsoever with a shipper.

Making it unlawful for any railway to obstruct any road, street or highway with cars for more than five minutes at a time.

Authorizing the railway commission to require a sufficient number of passenger cars on any train to seat all passengers.

Authorizing the railway commission to require cuspidors in waiting rooms and on trains.

Empowering the railway commission to fix switching charges.

Requiring one passenger train to be run each day each way on all railways more than 30 miles in length, where for six months the earnings were at the rate of \$1,000 a year.

Giving the railway commission power to regulate train schedules and the number of trains on all roads more than 25 miles in length.

Giving the railway commission control over all express rates, the proportion to be paid to the railways, and to fix free delivery zones in all cities of over 1,000 inhabitants.

Regulating the size of caboose cars, and requiring them to have platforms, toilet rooms and bunks, the railway commission to be allowed to excuse any violation of the law in its discretion.

Authorizing the railway commission to regulate the crossings of railways with each other.

Increasing the tax on express companies from \$1.25 to \$4 per \$100 of gross earnings per year.

Making it a misdemeanor to interfere with train signals, the crime to be punishable by fine of \$25 to \$500, imprisonment for one to twelve months, or both.

Empowering the railway commission to require railways to furnish sufficient depot storage and platform facilities at every incorporated town.

Requiring every railway train, including fast mails and express trains, to stop at all country seats.

Requiring private steam or electric railways over three miles in length to carry freight for the public.

Hearing Regarding Pacific Coast Rate Cases.

Hearings were held by the Interstate Commerce Commission in Washington last week regarding the proposed readjustment of rates both from the East and from the Pacific coast to Spokane, Wash., Salt Lake City, Utah, and other western intermountain points. The officers of the railways reported to the commission the results of the check made to ascertain what reductions in earnings would be caused by the reductions in rates which the commission proposed in its decisions in these cases. It was stated that the reductions in earnings on the Northern Pacific in four typical months would have amounted to \$374,459, or at the rate of \$1,040,000 a year; that the reductions on the Great Northern would have amounted to \$700,000 a year, and on the Denver & Rio Grande to \$156,000 a year.

It having been suggested in the arguments that water competition to the Pacific coast does not amount to much, Charles Donnelly, assistant general counsel of the Northern Pacific, showed that the value of the commodities moving to the Pacific coast via the Tehuantepec and Panama routes increased from \$27,500,000 in 1909 to \$40,000,000 in 1910.

W. W. Cotton, general attorney of the Oregon-Washington Railroad & Navigation Company, protested against the commission calling the rates it proposed to fix to Spokane just and reasonable. He said that if the commission called the tentative Spokane scale reasonable there was nothing to prevent the state commissions of Washington and Oregon from fixing the same rates on state business. He said that his road's rates are lower than rates once held by the commission to be just and reasonable; that its competition is increasing; that its earnings are practically stationary and that its operating expenses are increasing. E. C. Lindley, general solicitor of the Great Northern, said that the various valuations which had been made of this road by the state commissions of Washington, South Dakota and Minnesota, and the master in chancery in the Minnesota rate case, indicated that its value is in the neighborhood of

\$450,000,000, and he said that if the Great Northern is entitled to earn as high a percentage on its value as the Supreme Court of the United States said the Consolidated Gas Company ought to be permitted to earn, there could be no just reduction in its rates. Louis T. Brandeis appeared for the Atlantic seaboard shippers and contended that they should continue to be given the same rates to the Pacific coast and to interior points as are made from Chicago.

C. W. Durborow of the Southern Pacific, Gardiner Lathrop of the Santa Fe, and J. C. Jeffery of the Gould Lines, all appeared to present arguments against the reductions in rates proposed by the commission to various points in Utah, Nevada and Arizona.

Mr. Donnelly suggested, as a proper basis for fixing the rates to Spokane, that they be made 75 per cent. of the rate from the Atlantic seaboard to Seattle plus the local rate from Seattle back to Spokane. H. E. D. Jackson, secretary of the American-Hawaiian Steamship Company, was the first witness called by the railways when the hearing on the long and short haul question proper was begun on March 23. His evidence showed that his ships carry about everything that a land carrier ever handles. He said that his line can carry from two to three times as much freight when the Panama canal is finished as it does now via the Tehuantepec route, and that the cost of the service will be reduced no matter what the tolls through the canal

may be, because he assumes that the tolls will be reasonable. He said his line carried 239,000 tons westbound last year, an increase of about 75,000 tons, and estimated that when the canal is completed its present ships can carry 700,000 tons westbound. He based his estimate on the belief that the opening of the canal will reduce the running time between the two coasts from 30 to 20 days. While the route through the Panama canal will be 1,100 miles longer than the Tehuantepec route, the relieving of the ships of the necessity of docking at the port of Mexico and Salina Cruz will offset the longer distance that they must go. He said that the engaging of the California & Atlantic Line in the coast to coast business has reduced the maximum rate that the steamship lines get from about \$10 per ton to about \$6 per ton.

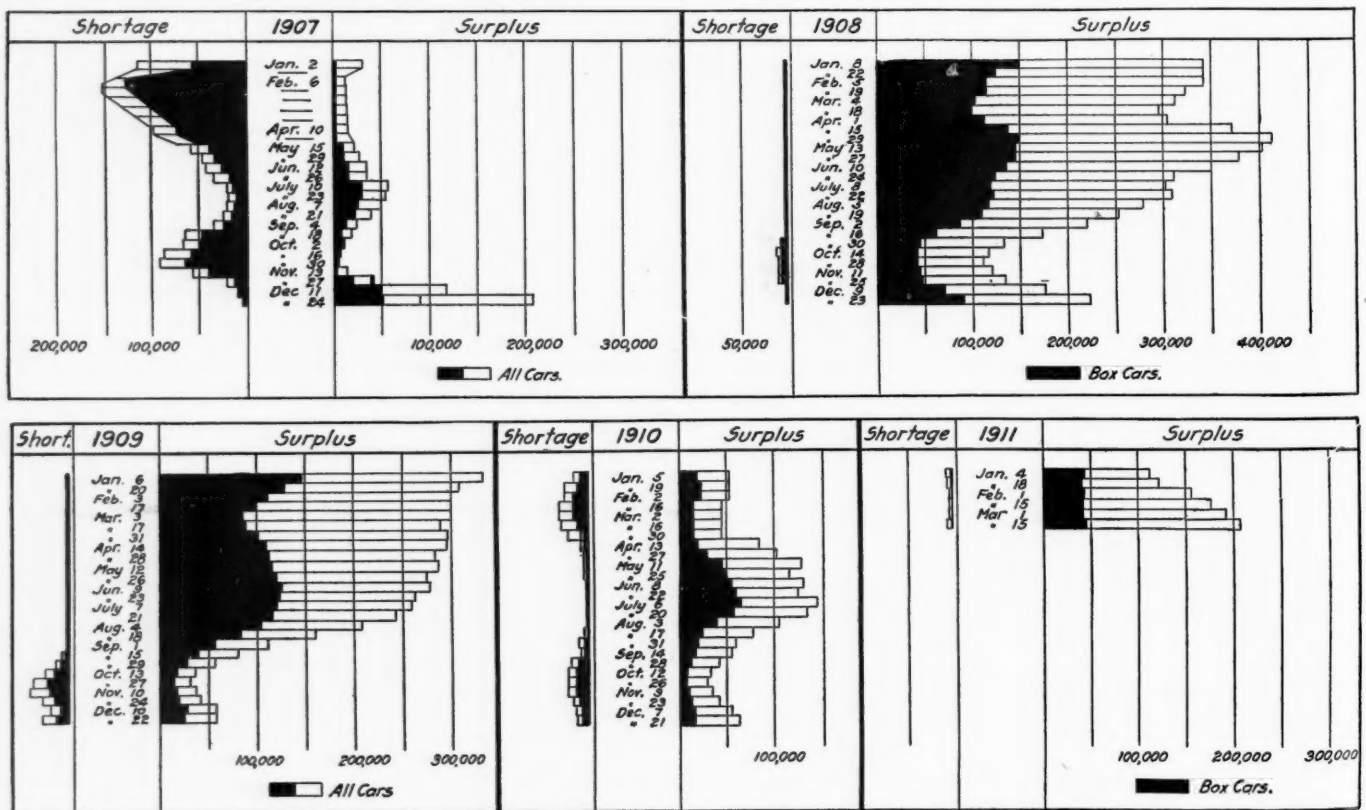
Car Surpluses and Shortages.

Arthur Hale, chairman of the committee on relations between railways of the American Railway Association, presenting statistical bulletin No. 91-A, giving a summary of car shortages and surpluses by groups from November 27, 1909, to March 15, 1911, says:

"The total surplus for this report is 208,527, an increase over last report of 15,854 cars. This increase is principally in the East and South, the western, northwestern and Pacific territory

CAR SURPLUSES AND SHORTAGES.									
Date.	No. of roads.	Surpluses				Shortages			
		Box.	Flat. gondola and hopper.	Other kinds.	Total.	Box.	Flat. gondola and hopper.	Other kinds.	Total.
Group *1.—March 15, 1911.....	8	1,047	1,411	4,032	6,686	0	20	0	27
" 2.—" 15, 1911.....	24	3,377	1,149	29,412	44,109	5	0	1	6
" 3.—" 15, 1911.....	25	4,379	1,924	53,478	64,430	0	0	0	294
" 4.—" 15, 1911.....	10	2,299	133	7,893	11,922	25	312	0	337
" 5.—" 15, 1911.....	19	1,916	634	7,022	11,115	23	50	0	123
" 6.—" 15, 1911.....	22	9,480	1,193	4,907	20,488	55	8	27	242
" 7.—" 15, 1911.....	4	1,021	186	1,779	3,504	0	0	0	0
" 8.—" 15, 1911.....	15	7,708	585	3,243	15,162	0	0	0	0
" 9.—" 15, 1911.....	11	4,295	466	214	5,904	50	0	0	50
" 10.—" 15, 1911.....	20	5,758	2,821	2,914	21,765	6	2	9	26
" 11.—" 15, 1911.....	5	1,834	722	25	3,442	126	0	0	155
Total	163	43,114	11,224	114,919	208,527	290	392	87	1,266

*Group 1 is composed of New England lines; Group 2—New York, New Jersey, Delaware, Maryland, and Eastern Pennsylvania lines; Group 3—Ohio, Indiana, Michigan and Western Pennsylvania lines; Group 4—West Virginia, Virginia, North and South Carolina lines; Group 5—Kentucky, Tennessee, Mississippi, Alabama, Georgia, and Florida lines; Group 6—Iowa, Illinois, Wisconsin, Minnesota and the Dakotas lines; Group 7—Montana, Wyoming and Nebraska lines; Group 8—Kansas, Colorado, Missouri, Arkansas and Oklahoma lines; Group 9—Texas, Louisiana and New Mexico lines; Group 10—Oregon, Idaho, California and Arizona lines; Group 11—Canadian lines.



Car Surpluses and Shortages from 1907 to 1911 Inclusive.

showing little change. The increase in coal car surplus continues, groups 2 (eastern), and 5 (southern), contributing the principal part of the increase of 11,177 cars shown in this bulletin. There is also an increase of 4,233 in the box car surplus, due principally to large increases reported from groups 1 (New England), 2 (eastern), and 11 (Canadian). The surplus is over four times as great as that reported for the corresponding date in 1910, and even allowing for the increase in equipment since that time, the reports indicate that there are twice as many idle cars at the present time as there were in March, 1910.

INTERSTATE COMMERCE COMMISSION.

The commission has suspended until June 20, proposed advances in freight rates by the principal lines from points in Oklahoma to points in Texas.

The commission has suspended until June 29 proposed advance in rates for transportation of cement in Central Freight Association territory which were to have become effective April 1; also proposed advances in rates and new tariffs affecting transit privileges on starch, filed by the Illinois Central, which were to have gone into effect April 1.

Reparation Awarded.

Gamble-Robinson Fruit Co. v. Northern Pacific et al. Opinion by the commission:

Rates \$1.79, \$1.75½, and \$1.35 per 100 lbs. on citrus fruits in carloads from Redlands, Prenda, Pachappa, Arlington, and Porterville, Cal., to Miles City, Mont., found unreasonable so far as they exceeded rate of \$1.15 subsequently established. (20 I. C. C. 421.)

H. Rosenblatt & Sons v. Chicago & North Western et al. Opinion by Commissioner Harlan:

The fabric known to the trade as "triplex cloth," frequently made up of woolen or silk materials, but consisting in this instance of a layer of cotton goods and a cotton shoddy lining with an intermediate layer of reclaimed rubber, is not cotton piece goods and therefore is not entitled to the cotton-piece-goods rate. Generally speaking it may properly take the rate applied to dry goods n. o. s. (20 I. C. C. 447.)

A. Geo. Schultz Co. v. Chicago, Milwaukee & St. Paul et al. Opinion by Commissioner Prouty:

Complainant's shipment of wood-pulp cartons from Milwaukee, Wis., to Spokane, Wash., was properly classified, and defendants wrongly charged an additional sum at destination on a higher classification. Reparation awarded for such additional sum and for demurrage charges which had in the meantime accrued; but it does not appear in this case that reparation should be awarded for an outlay in telegraphic charges.

After the car was partly unloaded the delivering carrier notified the consignee that, owing to a mistake in classification, additional charges must be paid, and, when the consignee declined to pay such additional charges, insisted that the portion of the carload which had been already removed should be returned to the car, which the consignee did. The expenditure due to removing and restoring a part of the carload was the direct consequence of the unlawful act of the delivering carrier in declining to deliver this carload, for which reparation should be awarded. (20 I. C. C. 403.)

Complaint Dismissed.

Browne Grain Co. v. Fort Worth & Rio Grande et al. Opinion by the commission:

Class rate of 56 cents per 100 lbs. corn shucks from Alexandria, La., to Brownwood, Texas, via a route 911 miles long, not found to be unjust or unreasonable. (20 I. C. C. 410.)

Riverside Mills v. Georgia Railroad et al. Opinion by the commission:

An informal complaint showing date of shipment, weight, and rate charged, coupled with an allegation that the rate was unreasonable, is sufficient presentation of a claim to come within section 16 of the act. *Memphis Freight Bureau v. St. L. W.*

Ry Co., 18 I. C. C. Rep., 67, reaffirmed. For reasons stated in the report. (20 I. C. C. 423.)

Clinton Bridge & Iron Works v. Chicago, Burlington & Quincy. Opinion by the commission:

Where a shipper, without disclosing to a carrier the character or size of its shipment, orders a particular kind of equipment, loads its traffic thereon, and directs transportation of the shipment as loaded, it must pay the rate lawfully applicable to the class of equipment used, although a lower rate would have been available had the freight been loaded in another kind of car. (20 I. C. C. 416.)

Dells Paper & Pulp Co. v. Chicago & North Western et al. Opinion by the commission:

Where a tariff provides different rates for property dependent on the value thereof and requires that the invoice value shall be stated and receipted for in order to secure the lower rate, the complainant must show that the requirements of the tariff were complied with, or that they were unreasonable, before reparation will be awarded on account of application of higher rate to a shipment the value of which did not exceed that on which a lower rate would have applied had the value been disclosed to the carrier. (20 I. C. C. 419.)

Change of Classification Denied.

W. E. Caldwell v. Chicago, Indianapolis & Louisville et al. Opinion by the commission:

1. Joint rates on tank material, Louisville, Ky., to Shawano, Wis., Combined Locks, Wis., and West Port Arthur, Tex., found unreasonable so far as they exceeded combination of intermediate rates contemporaneously in force.

2. Differences in value of articles offered for transportation cannot be precisely reflected in the comparatively small number of classes now used for rate-making purposes; and in the absence of a showing that the rate resulting from the classification is unreasonable or otherwise unlawful, it must be proved that a particular article is not rated with other articles similar in value, weight, and other essential transportation qualities, before the commission will require a change in the classification. Application of fifth class rates to wooden tank material (in the white) in official classification territory not found unreasonable. (20 I. C. C. 412.)

A Plant Facility.

Kaul Lumber Company v. Central of Georgia et al. Opinion by Commissioner Clements:

A lumber company doing business in Alabama had a railway which was constructed under its general incorporation and connected its mill, on the line of the Central of Georgia, with its timber. In 1901 the lumber company made a contract with the Central of Georgia under which it received a division of 2 cents per 100 lbs. of all rates on lumber shipped by it from its mill, which 2 cents was supposed to represent the portion of the through rate to which the lumber company was entitled for the haul from the timber to the mill, through rates being made from the timber, called "Wildwood," to various destinations. Between June 22, 1903, and February 4, 1908, the rates on yellow-pine lumber from the points of origin in Alabama to the Ohio river and related points were advanced 2 cents per 100 lbs. In the *Central Yellow Pine and Tift cases*, 10 I. C. C. Rep., pages 505 and 548, the commission condemned similar advances from competing and contiguous territory.

1. Without deciding whether this railway, owned and operated by the lumber company, is a common carrier or not, on the facts appearing in its operations in hauling company material for the Kaul Lumber Company it can be considered by this commission only as a plant facility.

2. That, conceding for the purposes of this case that the advance of 2 cents per 100 lbs. on yellow-pine lumber was unreasonable and unjust, the complainant lumber company is not entitled to any reparation thereon for the reason that it has never paid the advance. If the railway of the lumber company should be held to be a common carrier, as the complainant contends it should, in such case it can not be heard to complain of the advance in rates because it had concurred tacitly and explicitly in such advance. (20 I. C. C. 450.)

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF JANUARY, 1911. (SEE ALSO ISSUES MARCH 17 AND 24.)

Mileage operated at end of period.	Name of road.	Operating revenues				Operating expenses				Net operating revenue (or deficit).	Outside operations, net.	Operating income (or loss).	Increase (or dec.) last year.
		Freight.	Passenger.	inc. misc.	Total.	Way and structures.	Maintenance of equipment.	Traffic.	Transportation.				
309	Alabama Great Southern	\$271,135	\$89,346	\$392,947	\$91,548	\$46,756	\$91,548	\$11,219	\$121,138	\$9,212	\$279,873	\$16,370	\$16,370
301	Ann Arbor	120,880	32,118	162,401	122,331	20,532	122,331	4,046	64,937	11,406	123,244	11,874	3,569
364*	Arizona Eastern	91,390	32,551	123,941	123,941	21,980	123,941	1,813	35,292	1,311	124,609	6,944	36,224
662	Atlanta, Birmingham & Atlantic	176,299	48,498	224,797	33,324	31,324	15,576	91,971	9,684	10,060	46,354	18,016	18,016
627†	Bangor & Aroostook	238,255	35,868	274,123	43,669	43,669	23,007	4,273	95,684	9,043	186,116	2,525	1,910
411	Central Vermont	210,034	67,361	277,395	24,886	45,796	5,606	150,274	385	150,274	35,833	65,418	18,519
341	Charleston & Western Carolina	132,356	27,851	160,207	29,883	28,835	62,212	2,835	62,212	3,569	116,374	14,475	21,961
270	Chicago & Erie	323,273	53,114	376,387	38,391	38,391	22,609	220,971	.....	9,097	383,628	33,798	.....
329	Chicago, Indiana & Southern	283,270	19,521	302,791	310,642	38,525	8,277	131,159	.....	8,824	248,027	13,900	38,739
617	Chicago, Indianapolis & Louisville	275,276	109,337	384,613	432,953	55,876	72,501	17,365	179,467	13,844	379,053	22,500	6,214
337	Cincinnati, New Orleans & Texas Pacific	593,134	154,893	748,027	65,003	167,896	21,251	253,784	.....	17,705	525,603	260,734	21,235
441	Detroit, Toledo & Ironmont	115,932	11,073	127,005	141,341	38,567	15,909	2,495	93,172	6,172	155,175	18,000	15,970
611	Duluth, South Shore & Atlantic	131,067	56,743	187,810	200,508	33,636	31,054	8,550	97,486	7,486	178,874	18,000	21,272
583	Florida, East Coast	169,165	168,683	337,848	383,580	44,468	56,342	10,065	130,419	9,276	248,570	13,731	21,589
454	Fort Worth & Denver City	292,811	128,190	420,999	40,722	40,722	81,897	5,983	152,321	15,009	295,392	10,522	4,558
307	Georgia	212,813	70,609	283,422	27,416	48,213	10,926	127,858	.....	7,179	221,592	16,133	7,648
395	Georgia Southern & Florida	99,799	69,488	169,287	21,844	21,844	5,976	78,897	.....	9,131	159,232	8,858	5,009
587	Grand Rapids & Indiana	263,786	104,430	368,216	49,987	49,987	67,469	12,005	200,776	14,372	344,609	24,077	6,608
347	Grand Trunk Western	368,901	142,742	511,643	51,988	40,860	40,860	18,257	248,157	12,925	401,821	31,697	5,783
350	Hocking Valley	378,691	64,939	443,630	464,794	53,697	113,929	8,404	191,164	19,326	386,520	52,644	11,712
395	Long Island	223,113	374,598	597,711	91,507	107,393	15,987	384,916	.....	30,877	630,680	53,333	24,880
608	Norfolk Southern	153,364	56,946	210,310	23,755	23,755	4,791	76,092	.....	14,641	150,751	5,900	69,296
469	Norfolk & Western	795,685	170,116	965,801	103,673	190,819	214,477	15,017	542,682	23,568	986,563	11,834	91,474
352	Peoria & Eastern	231,019	55,360	286,379	35,205	35,205	50,756	5,686	153,120	5,974	257,144	9,500	25,414
191	Pittsburgh & Lake Erie	860,625	114,935	975,560	101,668	111,668	107,098	15,820	313,896	24,582	573,064	30,000	290,456
468	Rutland	129,634	70,793	200,427	25,018	48,765	6,051	113,279	.....	6,421	199,534	9,780	16,371
501‡	St. Louis, Brownsville & Mexico	104,965	60,194	175,159	44,475	12,829	2,322	59,602	.....	7,846	123,074	4,500	14,067
797‡	St. Louis Southwestern	556,144	117,386	673,530	69,913	110,992	25,155	178,346	.....	25,961	410,367	21,574	48,541
703‡	St. Louis & Western	247,259	80,217	327,476	34,129	96,114	86,867	10,128	175,254	20,040	293,397	10,000	49,475
433	Spokane, Portland & Seattle	166,735	70,508	237,243	255,481	55,124	19,446	4,029	92,775	9,891	181,265	25,000	63,471
458	Texas & New Orleans	223,725	92,946	316,671	37,088	53,459	7,317	142,187	.....	9,452	282,929	12,257	13,937
444	Toledo & Ohio Central	277,044	49,776	326,820	38,879	38,879	48,531	6,794	155,467	8,113	274,491	20,347	43,567
451	Toledo, St. Louis & Western	228,020	34,884	262,904	28,696	30,977	60,299	8,152	115,673	8,506	223,607	14,550	20,515
463	Trinity & Brazos Valley	146,918	28,005	174,923	181,099	35,156	26,221	7,791	84,881	11,847	165,896	3,500	20,085
474†	Virginian	288,367	18,042	306,409	37,809	37,809	53,613	4,438	86,798	7,207	189,865	17,600	113,988
457	Wheeling & Lake Erie	381,416	47,481	428,897	462,754	36,433	106,810	7,761	186,004	14,032	351,040	19,627	33,122
SEVEN MONTHS OF FISCAL YEAR, 1911.													
309	Alabama Great Southern	\$1,801,818	\$690,144	\$2,491,962	\$326,415	\$612,731	\$72,180	\$815,031	\$63,895	\$1,890,252	\$822,012	\$95,834	\$72,260
301	Ann Arbor	789,502	231,652	1,021,154	160,805	138,494	27,799	401,390	51,501	779,909	393,709	97,465	300,402
364*	Arizona Eastern	659,880	231,648	891,528	173,582	87,494	13,709	268,744	28,148	571,667	385,020	41,932	29,127
662	Atlanta, Birmingham & Atlantic	1,179,691	379,212	1,558,903	198,169	259,997	103,303	605,050	62,161	1,228,685	432,198	78,645	59,291
627†	Bangor & Aroostook	1,265,053	407,547	1,672,600	303,216	215,024	240,657	55,418	151,606	75,418	1,169,331	15,625	38,546
411	Central Vermont	1,488,598	681,795	2,170,393	289,636	351,082	50,831	1,017,889	53,417	1,762,855	582,968	51,213	19,326
341	Charleston & Western Carolina	820,756	226,909	1,047,665	199,540	135,209	22,052	367,527	26,801	361,579	345,475	31,323	102,039
270	Chicago & Erie	343,031	49,152	392,183	63,856	64,763	143,289	1,377,327	66,636	2,594,871	508,256	79,263	73,066
329	Chicago, Indiana & Southern	1,887,836	178,017	2,065,853	303,330	411,068	64,294	836,798	63,112	1,678,622	445,930	94,593	169,803
617	Chicago, Indianapolis & Louisville	2,392,641	947,094	3,339,735	473,847	516,347	116,655	1,291,630	102,381	2,501,056	1,150,271	157,500	116,177
337	Cincinnati, New Orleans & Texas Pacific	4,303,671	1,022,494	5,326,165	580,457	1,039,575	145,438	1,554,909	124,731	3,445,110	2,151,339	1,991,455	198,710
441	Detroit, Toledo & Ironmont	985,969	105,276	1,091,245	185,953	234,372	19,871	621,046	40,134	1,108,882	77,071	46,984	1,665
611	Duluth, South Shore & Atlantic	1,222,340	612,422	1,834,762	195,456	264,131	69,246	719,547	50,419	1,310,071	625,385	123,871	509,423
583	Florida, East Coast	950,184	614,273	1,564,457	264,131	305,171	39,454	653,126	55,073	1,349,643	339,969	96,141	339,969
454	Fort Worth & Denver City	2,204,916	1,069,790	3,274,706	348,312	324,022	519,188	42,372	1,040,917	102,721	2,029,220	70,522	308,846
307	Georgia	1,274,543	554,312	1,828,855	1,946,118	250,560	290,471	73,937	758,933	50,440	1,428,711	14,713	8,873
395	Georgia Southern & Florida	760,124	478,885	1,239,009	1,428,535	155,976	290,771	42,268	528,688	63,347	1,081,050	66,161	281,324
587	Grand Rapids & Indiana	1,796,099	402,147	2,198,246	3,121,447	402,162	498,306	88,601	1,368,027	103,858	2,460,954	169,480	490,746
347	Grand Trunk Western	2,216,884	1,200,876	3,417,760	3,660,540	376,131	523,200	127,881	1,538,207	91,542	2,656,961	221,881	154,103
617	Hocking Valley	3,829,221	551,979	4,381,200	4,669,405	597,583	728,469	62,447	1,462,309	116,681	2,967,489	203,965	149,181
395	Long Island	1,815,854	3,995,693	5,811,547	6,102,182	667,066	840,822	126,569	2,806,627	159,752	4,600,836	314,755	392,729
608	Norfolk Southern	1,065,412	472,552	1,537,964	1,658,311	185,504	202,341	34,155	512,909	96,378	1,031,287	42,100	588,779
469	Norfolk & Western	5,838,111	1,402,155	7,240,266	7,695,031	1,342,591	4,445,234	21,596	3,771,200	17,357	6,068,978	24,132	820,668
352	Peoria & Eastern	1,647,443	447,336	2,094,779	2,250,437	286,186							

Following the Common Law.

Southwestern Produce Distributors et al. v. Wabash Railroad.
Opinion by Commissioner Harlan:

The public stations, depots, and grounds of carriers to a certain extent are also their private property subject to their own control with respect to any private business carried on in them, provided the use so made of the property is in itself reasonable and contributes to the public convenience or to the advantage of the carrier without creating preferences or discriminations as between shippers or travelers. Station restaurants, news stands, barber shops, and similar private enterprises at railway terminals, ordinarily conducted by outside interests, add to the convenience of the public before the transportation by the carrier has commenced or after it has been completed, and are no part of the service undertaken by the carrier for the public under its published tariffs. Complaint is by a rival auction company demanding at the St. Louis terminals of the defendant the same facilities for conducting its business as an auctioneer of fruits and vegetables that are accorded exclusively to another auction company. The complaint is without merit, the proof showing that the latter company offers its services to all shippers at a uniform rate and without preference or discrimination.

Formal Order on Railway Fuel Coal Rates.

In re Restricted Rates. Opinion by Commissioner Clark:

The commission adheres to its ruling that "a tariff providing for reduced rates on coal used for steam purposes, or that the carrier will refund part of the regular tariff charges on presentation of evidence that the coal was so used, is improper and unlawful—that is to say, that the carrier has no right to attempt to dictate the uses to which commodities transported by it shall be put in order to enjoy a transportation rate."

It also adheres to its ruling that "a carrier, or a person or corporation operating a railway or other transportation line may not, as a shipper over the lines of another carrier, be given any preference in the application of tariff rates on interstate shipments, but it may lawfully and properly take advantage of legal tariff joint rates applying to a convenient junction or other point on its own line, provided such shipments are consigned through to such point from point of origin and are, in good faith, sent to such billed destination."

Carriers ordered to cease maintaining tariffs which contain rates applicable only on shipments for a particular consignee or when the commodity transported is for a particular use, or rates that are restricted to the use of certain shippers and not open to all shippers alike.

Commissioner Prouty, dissenting:

I agree that the rate cannot be varied according to the use to which an article is put.

All traffic must move under some published rate, and this applies to property owned by a railway when moving over another railway. Ordinarily, a railway does not consume its coal at the junction point where it receives it from its connection, but hauls it to some other point upon its line, where it is taken from the cars for use upon its locomotives or for other consumption. If a private individual shipped coal from the mine to this consuming point, the rate charged would usually be a joint through rate materially less than the same rates up to the junction point plus the local rate of the consuming road to the point of consumption. Now, the commission holds that a railway may bill its coal to the consuming point at the rate which a private shipper would pay. Since the joint through rate is usually so divided between the producing road and the consuming road that the amount received out of it by the producing road is less than the local rate from the mine up to the junction point it results that by this process the consuming road obtains its freight for less than it would had the traffic been billed to the junction point and received by it at that point. Otherwise stated, the rate upon which this coal moves to the rails of the consuming road is the division of the producing road.

To this system, in practical operation, the defendants urged several objections:

The railway generally buys its fuel f. o. b. the mine. The rate which it pays from the mine to the junction point is the division of the joint rate. That division is a matter of contract between the two roads. It is not published and is not, therefore, necessarily known. It may be changed from day to

day without notice to anyone. Coal operators who desire to sell for fuel supply complain that under this system they do not know, and can not know, what the rate is, nor whether that rate will be maintained, nor, if the rate is an unfair one, can they apply to this commission for its correction. It is further urged that there frequently has been and that there always will be more or less manipulation in these divisions, with the result that certain mines or certain lines of railway will be preferred.

The answer of the commission to this objection is that it may require from the carrier a statement of its division. We may undoubtedly require carriers to inform us of their divisions and to state from time to time any changes in those divisions, but the divisions themselves are not a part of the rate which carriers are required to publish. If they were published there is no requirement which will prevent their change at the will of the carrier. This commission has no jurisdiction to fix these divisions except in case of a joint rate established by it where the carriers have failed to agree between themselves upon the division.

It seems clear to me that under the system which the commission says must be followed the actual rate upon which this traffic moves never can be known; that this rate may be changed from day to day, and that it is entirely beyond the power of the commission to correct it, if wrong. All this follows, of necessity, from the fact that whatever the theory of the case may be, in actual practice the rate on which this traffic moves is the division of the producing carrier up to the junction point.

The system which the railways now have in effect was first established at the request of the operators, but is now approved by all parties concerned, the operators, the producing road, and the consuming road. It is universally recognized that in no other way can the actual rate of transportation be known. In no other way can its maintenance be assured, and in no other way could it, if wrong, be corrected by public authority.

The purpose of the act to regulate commerce is to facilitate, not to impede, commercial operations. When shippers and railways unite in asking that a particular thing be done; when that thing is manifestly for the interest and convenience of all parties; when no harm can result, but when, upon the contrary, the fundamental purposes of the act will be promoted, I think we should, if possible, put such a construction upon this statute as will permit it.

It does not seem to be seriously claimed by the majority that the present method of publishing these fuel-supply rates is attended with any practical wrong, but it is said that the second section of the act peremptorily forbids it and that it is therefore unlawful and must be so declared by us.

The second section provides that where the service is like and contemporaneous, the traffic of a like kind, and the circumstances and conditions under which the transportation occurs substantially similar, the rate shall be the same. The majority hold that a railway stands like any other shipper and that to accord one rate when the shipment is for a railway and another rate when it is for a private individual is to violate that section. I concede this to be so if the only difference in the transaction be that the freight money is in one case paid by a railway company and in the other case by a private party, but I think that there are other incidents of the transaction arising out of the circumstance that this fuel is for railway supply and is received at the junction point by a railway, which excepts the case from the operation of the second section.

If our court holds, as it apparently has indicated in the *Wight case*, that difference of circumstances and conditions may be shown by showing difference in cost of service, it is difficult to see how it can avoid the conclusion that, when the cost of service for any reason is less in transporting the freight of one person than in transporting that of another, the second section does not apply. It should be borne in mind that the third section may prevent the making of the lower rate, even though it be lawful under the second. The prohibition of the second section is absolute within the sphere of its operation. If the service is like and contemporaneous, the kind of traffic like, and the circumstances and conditions of the transportation the same, then the rate must also be the same. The third section is more elastic. It forbids *undue* discrimination or advantage, and it is for us to say, upon a consideration of all the facts, whether that section has been violated.

It seems to me, therefore, that the circumstances and conditions attending the transportation and delivery of this fuel coal are different from those under which private coal is handled, and that for this reason the second section does not forbid the making of different rates for the different services, and if this be so then the second section has no application whatever. I think, however, that there is a broader and more fundamental ground upon which the operation of that section can be distinguished. This fuel coal is not, to my mind, a like kind of traffic with private coal nor is its carriage a like service within the meaning of that section. Even though the physical service performed be exactly the same it is not a violation of the second section, upon the part of the carrier, to demand and receive a different compensation for that service. (20 I. C. C. 443.)

STATE COMMISSIONS.

The Minnesota Railway Commission has again postponed its investigation into the reasonableness of express rates in that state. The hearing will be held at St. Paul on April 13 instead of April 5.

The Railroad Commissioners of California have revised the car demurrage rules of that state. The rate is reduced from \$6 to \$3 per car per day; free time is made 48 hours, instead of one day, except in the case of oil tank cars where it remains at 24 hours; and there are detailed rules as to when the railways are required to furnish cars on the request of shippers.

A bill has passed the house of the Iowa legislature, providing for the establishment of the office of state commerce counsel. The measure provides that the commerce counsel, who will receive \$5,000 a year, will be appointed by the members of the state railway commission. It will be his duty to investigate the reasonableness of rates charged by all companies and individuals under the jurisdiction of the commission and to assist the commission in presenting cases before the Interstate Commerce Commission.

The Public Service Commission of Maryland, to carry out the requirements of the law of last year under which the commission was established, has ordered a thorough inspection of the physical properties of the railways of the state; this to be done with reference to the condition of track, bridges, cars and engines, safety appliances and everything related directly to the comfort and safety of passengers; and similar inspection is to be made of steamboat lines, electric railways and gas, electric and water companies. The chief engineer of the commission, Charles E. Phelps, Jr., is directed to make preparations for this inspection and also to organize the necessary force to do the work.

COURT NEWS.

The Oklahoma supreme court has rendered a decision upholding an order of the corporation commission requiring all railways operating in Oklahoma to establish general offices in that state.

The federal court at Oklahoma City, Okla., has issued a perpetual injunction forbidding the enforcement of the Oklahoma law which forbids foreign corporations to transfer cases from the state to the federal courts.

The Supreme Court of Kansas has declared unconstitutional the law of that state requiring the railways to carry state militia at 1 cent a mile, holding that it discriminates against the public and is a confiscation of the railways' property.

The United States Circuit Court of Appeals has held the temporary injunction granted against the corporation commission of Oklahoma by United States Circuit Judge Hook nearly a year ago, enjoining Oklahoma from enforcing the two-cent passenger fare law and a reduction in freight rates.

In the United States Circuit Court at Savannah, Ga., March 24, Judge Speer fined the Merchants' & Miners' Transportation Company \$20,000 for giving preferences in freight rates. It was the conviction in this case that led to the making of pleas of guilty by two of the railway companies in the same court last week.

Railway Officers.

ELECTIONS AND APPOINTMENTS.

Executive, Financial and Legal Officers.

Peter F. Dunne, general attorney of the Southern Pacific, with office at San Francisco, Cal., has resigned to engage in private practice.

In regard to the resignation of C. S. Clarke from the first vice-presidency of the Missouri Pacific, see a statement made by Mr. Clarke on page 801.

E. J. Perry, superintendent and freight and passenger agent of the Kansas City, Clinton & Springfield, with office at Springfield, Mo., has been elected vice-president.

J. C. Campbell has been appointed auditor of the Lehigh & New England, with office at Philadelphia, succeeding Edward Hughes, who has been appointed purchasing agent.

W. G. Evans, president of the Denver City Tramway, has been elected president of the Denver, Northwestern & Pacific, succeeding David H. Moffat deceased. F. G. Moffat was elected vice-president.

Henry Tatnall, third vice-president of the Pennsylvania Railroad, has been elected also president of the Erie & Western Transportation Company, with office at Philadelphia, Pa. J. C. Evans, manager of the Erie & Western Transportation Company, has been elected vice-president and general manager, with office at Buffalo, N. Y.

The officers of the Montpelier & Wells River Railroad and the Barre Railroad are as follows: T. E. Byrnes, president, Boston, Mass.; H. E. Folsom, vice-president, Lyndonville, Vt.; W. J. Hobbs, comptroller, Boston, Mass.; W. A. Stowell, clerk and treasurer, Montpelier, Vt.; H. E. Fisher, assistant treasurer; W. T. Rodden, auditor disbursements; W. H. Young, auditor passenger accounts, and J. F. Turner, auditor freight accounts, with offices at Boston, Mass.

Operating Officers.

George Brophy has been appointed an assistant division superintendent of the Union Pacific, with office at Ogden, Utah.

T. A. Sweeney, trainmaster of the Chicago Great Western, at Des Moines, Iowa, has been appointed assistant superintendent, with office at Chicago.

M. Dailey, formerly superintendent of the Chicago Great Western at Clarion, Iowa, has been appointed a trainmaster of the Northern Pacific, with office at Seattle, Wash.

E. A. Gould, formerly assistant to the president of the Cincinnati, Hamilton & Dayton at Cincinnati, Ohio, has been appointed assistant to the general manager, with office at Cincinnati.

F. J. Evans has been appointed a trainmaster on the Pecos division of the Atchison, Topeka & Santa Fe and of the Eastern Railway of New Mexico, with office at Clovis, N. Mex., succeeding R. J. Woodward.

L. C. Badgley, trainmaster of the Chicago & Alton, with office at Peoria, Ill., having resigned, the jurisdiction of S. P. Henderson, trainmaster at Bloomington, Ill., will be extended over the Dwight and Rutland branches, succeeding Mr. Badgley.

Ernest Stenger, whose appointment as general manager of the St. Joseph & Grand Island, with office at St. Joseph, Mo., has been announced in these columns, was born in 1865 in Alsace, and graduated from the University of Michigan in 1886. In the same year he began railway work for the Chicago, Burlington & Quincy as a rodman. In 1888 he went with the Atchison, Topeka & Santa Fe as a draftsman, and two years later became an assistant engineer on the Missouri Pacific. He was appointed division engineer of the Union Pacific in 1900, and was afterwards promoted to assistant superintendent and then to superintendent. He was appointed general superintendent of the Rio Grande Western in 1907. Mr. Stenger's headquarters will be at St. Joseph, Mo., instead of at St. Louis, as was previously announced.

William C. Loree, whose appointment as general manager of the Cincinnati, Hamilton & Dayton, with office at Cincinnati, Ohio, has been announced in these columns, was born in October, 1860, at Newark, N. J. He received a common school education and began railway work in May, 1883, on the Pennsylvania Lines West of Pittsburgh. In 1889 he was appointed engineer of maintenance of way on the Chicago division, and then to a similar place on the Indianapolis division. He was appointed superintendent of the Indianapolis division in March, 1899, and in December, 1902, was appointed superintendent of the Chicago division of the Baltimore & Ohio. In May of the following year he was promoted to general superintendent of the Pittsburgh system of the Baltimore & Ohio, and was transferred to the Wheeling system in January, 1905, where he remained until May, 1910, when he returned to the Pittsburgh system, which office he resigned to become general manager as above.

John G. Rodgers, whose appointment as general superintendent of the Buffalo & Allegheny Valley division of the Pennsylvania Railroad, with office at Buffalo, N. Y., has been announced in



J. G. Rodgers.

these columns was born November 14, 1862. He was educated at Lehigh University and entered the service of the Pennsylvania Railroad on July, 20, 1882. Mr. Rodgers served through the various grades in the engineering department until he reached the position of assistant engineer of construction, from which he was transferred in January, 1888, to the maintenance of way office at Altoona. He held various positions in that department until January, 1900, when he resigned as supervisor of the Philadelphia division to become superintendent of the New York, Philadelphia & Norfolk. In March, 1909, Mr. Rodgers was appointed assistant to the general manager of the Pennsylvania Railroad, which position he held at the time of his recent appointment as general superintendent of the Buffalo & Allegheny Valley division.

Traffic Officers.

E. Copland has been appointed a general agent in the freight department of the Chicago, Burlington & Quincy, with office at Milwaukee, Wis., succeeding F. K. Kelley, deceased.

Jarvis S. McCrea, commercial agent of the Lehigh Valley, at Buffalo, N. Y., has been appointed division freight agent, with office at Ithaca, N. Y., succeeding Charles W. Williams, resigned.

James E. Cummins has been appointed a traveling freight agent of the Norfolk & Western, with office at Toledo, Ohio, succeeding Frank J. Howell, resigned, to accept service with another company.

O. F. Spindler, commercial agent of the Chicago & Alton and the Toledo, St. Louis & Western at Cleveland, Ohio, has been appointed agent of the Lackawanna Fast Freight Line, with office at St. Louis, Mo.

H. W. Jackson has been appointed a general agent of the Colorado Midland, with office in Chicago. Frank M. Townsend has been appointed a general agent, with office at Pittsburgh, Pa., where the agency has been re-established.

F. B. Rowley has been appointed a commercial agent of the Lake Erie & Western, with office at Minneapolis, Minn., succeeding George C. Knoche, deceased. E. J. Lewis has been appointed a soliciting freight agent, with office at Minneapolis.

F. J. Balch, general freight agent of the New York & Ottawa, a subsidiary line of the New York Central & Hudson River, has been appointed also general passenger agent, with office at Ottawa, Ont., succeeding to the duties of Harry K. Gays.

W. G. Howard, commercial agent of the Chicago & Alton and the Toledo, St. Louis & Western at Cincinnati, Ohio, has been appointed commercial agent, with office at Cleveland, Ohio, succeeding O. F. Spindler, resigned, to accept service with another company. C. D. Fortney, commercial agent of the Minneapolis & St. Louis and the Iowa Central at Cleveland, succeeds Mr. Howard at Cincinnati.

Incident to the consolidation of the traffic departments of the Baltimore & Ohio Southwestern and the Cincinnati, Hamilton & Dayton, C. L. Thomas, general traffic manager of the Cincinnati, Hamilton & Dayton at Cincinnati, Ohio, has been appointed freight traffic manager of both roads, with office at Cincinnati. O. P. McCarthy, general passenger agent of the Baltimore & Ohio Southwestern, has had his jurisdiction extended over the Cincinnati, Hamilton & Dayton, succeeding W. B. Calloway, who has been appointed assistant general passenger agent of both roads. S. T. McLaughlin, general freight agent of the Baltimore & Ohio Southwestern, has had his jurisdiction extended over the Cincinnati, Hamilton & Dayton, succeeding J. W. Allison, who has been appointed freight tariff agent of both roads. Archibald Fries, assistant general freight agent of the Baltimore & Ohio Southwestern, has had his jurisdiction extended over the Cincinnati, Hamilton & Dayton, succeeding Stuart Allen, who has been appointed general agent in the freight department of both roads; all with offices at Cincinnati.

Engineering and Rolling Stock Officers.

George W. Trout has been appointed signal engineer of the Pere Marquette, with office at Detroit, Mich., succeeding W. J. McWain, deceased.

F. J. Smith has been appointed a master mechanic of the Chicago Great Western, with office at Stockton, Ill., succeeding J. M. Robb, resigned.

J. C. Pratt, roadmaster of the Minneapolis & St. Louis at Watertown, S. D., has been appointed roadmaster of the Iowa Central, with office at Marshalltown, Iowa, succeeding M. H. Sheeley, resigned.

R. J. McQuaid has been appointed a foreman in charge of locomotive and car departments of the Rock Island Lines, with office at Rock Island, Ill., succeeding V. W. Ellet, resigned, to go to the Hunt-Spiller Manufacturing Corporation, Boston, Mass.

C. J. Stewart, master mechanic of the Western division of the New York, New Haven & Hartford, at Waterbury, Conn., has been appointed master mechanic of the Boston division, with office at South Boston, Mass., succeeding James Hocking, resigned. J. N. Mowery, master mechanic of the Lehigh Valley, succeeds Mr. Stewart.

C. E. Gossett, who was appointed master mechanic of the Minneapolis & St. Louis some months ago, requests us to announce that his correct address is "Cedar Lake Shops, Minneapolis, Minn.," and not Cedar Lake, Minn. Owing to an error made in framing the circular announcing his appointment, much of his mail is incorrectly addressed to Cedar Lake, Minn.

W. H. Kirkbride, division engineer on the Coast division of the Southern Pacific at San Francisco, Cal., has been appointed division engineer on the Sacramento division, with office at Sacramento, Cal., succeeding G. B. Herington, resigned, to accept service elsewhere. E. C. Morrison, division engineer on the Shasta division at Dunsmuir, Cal., succeeds Mr. Kirkbride, and F. M. Siefert succeeds Mr. Morrison.

C. I. Leiper, who was recently appointed division engineer of the New York division of the Pennsylvania Railroad, with office at Jersey City, N. J., as has been announced in these columns, was born October 28, 1874, at Wallingford, Pa., and was educated at Swarthmore College. He entered the service of the Pennsylvania Railroad in September, 1897, in the engineering department, and in March, 1901, was appointed an assistant supervisor. In September, 1903, he was promoted to supervisor,

and in August, 1909, was appointed division engineer of the New York Terminal division, which position he held at the time of his recent appointment as division engineer of the New York division.

J. H. Harris, whose appointment as division engineer of the New York Terminal division of the Pennsylvania Railroad, has been announced in these columns, was born December 8, 1867, at Aldershot, Eng., and was educated at the University of Virginia. He began railway work in the engineering department of the Norfolk & Western, on the Ohio extension through West Virginia, and in December, 1894, entered the engineering department of the Pennsylvania Railroad on the New York division. In June, 1899, he was transferred to Altoona, Pa., and the following year he was appointed assistant supervisor. He was promoted to supervisor of the Belvidere division, in November, 1901, and was transferred to the Maryland division in December, 1905. Mr. Harris was appointed division engineer of the Delaware division in April, 1909, and is now transferred to the New York Terminal division.

A. C. Adams, who was recently appointed superintendent of motive power of the Spokane, Portland & Seattle, the Oregon Electric and the United Railways Company, with office at Portland, Ore., as has been announced in these columns, was born on February 6, 1866, at Everett, Kan. Mr. Adams was educated in the public schools and completed the mechanical course of the Scranton International Correspondence School in 1890. He began railway work in August, 1884, as a machinist's apprentice on the Missouri Pacific, and in October, 1887, went to the Chicago, Rock Island & Pacific as a machinist, and was later, consecutively, pit foreman, roundhouse foreman, general foreman and master mechanic. He left the service of that company in September, 1906, and in November of the same year went to the Chicago, Burlington & Quincy as master mechanic. One year later he went to the Delaware, Lackawanna & Western as master mechanic, and since November, 1908, until his recent appointment, was master mechanic of the New York, New Haven & Hartford.



A. C. Adams.

Purchasing Officers.

T. Moore has been appointed general storekeeper of the Virginian Railway, with office at Princeton, W. Va.

Edward Hughes has been appointed purchasing agent of the Lehigh & New England, with office at Lansford, Pa., succeeding J. B. Whitehead, resigned.

Sydney B. Wight, whose appointment as general purchasing agent of the New York Central Lines, with office at New York City, has been announced in these columns, is a graduate of the University of Michigan. In June, 1891, Mr. Wight was appointed secretary to the president of the Michigan Central Railroad. He remained in that position until July, 1896, when he was appointed assistant purchasing agent, and in August, 1903, was promoted to purchasing agent of the same company, with office at Detroit, Mich. In October, 1907, he was appointed purchasing agent of the New York Central Lines, with office at New York, remaining in that position until his recent appointment as general purchasing agent.

William C. Bower, who was recently appointed purchasing agent of the New York Central & Hudson River, the West Shore, the Boston & Albany and the New York & Ottawa, with office

at New York, was born September 20, 1878, at Clarkston, Mich., and was educated in the high school of his native town and at Ferris Institute, Big Rapids. Mr. Bower began railway work in December, 1897, as a stenographer in the trainmaster's office of the Grand Trunk, at Battle Creek and was later stenographer and clerk in the offices of the superintendent and the general counsel of the Grand Trunk, at Detroit. From December, 1901, to September, 1903, he was out of railway work. He was then appointed stenographer to the president and vice-president of the New York Central & Hudson River, and since April, 1905, has been secretary and chief clerk to W. C. Brown, president of the New York Central Lines.

FOREIGN RAILWAY NOTES.

The total open mileage of the South African railways is now 7,045, of which Cape Colony has 3,328 miles, Natal 995 miles, Orange River Colony 992 miles, and the Transvaal 1,730 miles. With lines authorized and those under construction the mileage will be increased nearly 1,000 miles.

The Union of South Africa now has, roughly, 7,000 miles of railway, which earn \$50,000,000 a year. Half of this sum is paid out in working costs, the staff being 40,000, while nearly \$10,000,000 goes for interest. With a further deduction of \$8,325,000 for betterment and depreciation and other charges, there is a balance of about \$5,625,000 as a clear revenue to the government, by which owns and operates the railways.

An Asuncion, Paraguay, paper reports that in order to provide the San Pablo-Rio Grande with resources for the reconstruction of the lines connecting Asuncion with San Francisco, on the Atlantic coast of Brazil, the Brazil Railway Co., the parent concern, with headquarters in New York, floated a loan in Paris of \$16,694,500, represented by 173,000 4½ per cent. bonds of the par value of \$100 each. The demand for the new securities so far exceeded the offer that only 60 per cent. of the subscriptions could be satisfied.

The *Frankfurter Zeitung* reports that the project of an Ibero-Afro-American railway is being pushed by a Spanish committee, after having been brought up by the Spanish representatives at the Algier conference. In order to make the proposed railway clearly international in character and avoid possible conflicts between interested powers, the committee has suggested that the Swiss government take the initiative of calling a conference to study the subject and eventually lead to the organization of an international company to undertake the building of the road. The Ibero-Afro-American railway, as proposed, will run along the western coast of Africa from the Straits of Gibraltar to Goree-Dakar or Bathurst—that is, to the point which is nearest South America. The crossing from Goree-Dakar or Bathurst to Pernambuco occupies only three days on the quietest part of the Atlantic ocean, always free from fog and ice. The crossing from Gibraltar to Africa, about 10 miles, can be made in less than half an hour and cars will probably be ferried across to avoid transshipment. The building of the projected railway will reduce the journey from Europe to South America to five days.

The total expense of building the road is estimated at \$135,100,000. The cost of a double track, including the right of way for two additional tracks which is believed will prove necessary later on, is placed at \$68,000 per mile. The distance from Gibraltar to Goree-Dakar is 1,740 miles. In case Bathurst is chosen as terminus, the distance would be 1,864 miles. As the line will follow the coast, work can be commenced at several points at the same time. Cost of right of way will be insignificant. Labor will be cheap, it is believed, judging from experience with native labor in building harbor improvements in Morocco. Material and transportation of same, as well as supplies for laborers, will be expensive items. Certain stretches will have to be supplied with fresh water and a permanent water supply will have to be insured all along the line. Otherwise, there are practically no natural difficulties to be contended with. In addition to the great impetus given to European-South American relations by the new railway, it will open up Morocco as well as French and English colonies in western Africa, besides considerably reducing distance to South Africa.

Railway Construction.

New Incorporations, Surveys, Etc.

ALASKA NORTHERN.—According to press reports a new survey is to be made from Cook Inlet, Alaska, to the coal fields at Tanana, and it is expected to carry out some of the construction work this year. The company has track laid on 71 miles from Seward north. O. G. Laberee, president and general manager, Seattle, Wash. A. W. Swanitz, chief engineer, Alameda, Cal., and Seward, Alaska. (June 24, p. 1812.)

ALBERTA CENTRAL.—A contract for building 100 miles from Stettler, Alb., westward to the Brazeau coal fields, has been given to Janse, MacDonald & Co., Calgary. It is estimated that the contract is worth \$2,500,000. J. T. Moore, president and J. G. McGregor, chief engineer, Red Deer.

BALTIMORE & OHIO.—An officer writes that, although reports have been made by the engineers it has not yet been definitely determined what improvement work is to be carried out between Callery Junction, Pa., and Kane.

CANADIAN NORTHERN.—The contracts recently let by this company are as follows: Westward from Edmonton, Alb., 200 miles, Alsack to Calgary, on the Marysville extension, 200 miles, Moose Jaw, Sask., to Redville, on the Marysville extension, 90 miles; North Battleford towards the Peace river country, on the Jack Fish extension, 35 miles, and Shell Brook to Battleford, 80 miles, to the Cowan Construction Company, Winnipeg, Man. From Red Deer, Alb., to Calgary, 100 miles, and on the main line, from Vancouver, B. C., eastward 200 miles, to the Northern Construction Company. (March 24, p. 710.)

The Manitoba government has granted a subsidy of \$13,000 a mile to the Canadian Northern for building branch lines in Manitoba, as follows: Oak Point extension, 50 miles; Deloraine branch extension, 60 miles; Ste. Rose du Lac to Winnipegosis, 53 miles.

CHEHALIS & COWLITZ RIVER.—Financial arrangements are said to have been made, which insures the construction of this line. The projected route is from Chehalis, Wash., southeast to a point on the Cowlitz river, about 20 miles, with a number of branch lines. G. Robinson and H. C. Hoffman, Chehalis, are interested. (January 20, p. 143.)

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—The terminal facilities at Altoona, Wis., are to be enlarged this year, it is said, to relieve the congestion at Eau Claire. The improvements will include laying about 20 miles of new track, putting up a repair shop, 65 ft. x 100 ft., and extensions to the east yards.

CITRUS SOUTHERN (Electric).—An officer writes that the company expects to let contracts this year for building a line from Sanford, Orange county, Fla., south via Orlando to Kissimmee, Osceola county, about 45 miles. T. K. Miller, president, Orlando, and J. J. Brophy, vice-president and engineer, Winter Park.

CULLMAN COAL & COKE LINE.—An officer writes that this company intends to build during the coming summer southwest from Cullman, Ala., via Trimble and Bremen to Julianna. Track has been laid on 6.5 miles. The work will be difficult and involves a total excavation of 213,483 cu. yds.; total borrow work, 157,433 cu. yds. Maximum grades will be 0.99 per cent., and maximum curvature, 9 deg. Steel bridges, requiring 578 tons of steel, will be put up, and 5,718 cu. yds. of concrete for piers and abutments, of which 1,551 cu. yds. are now in place. The Virginia Bridge & Iron Company, Roanoke, Va., has the contract for the bridge work, and Arnott & Co., Birmingham, Ala., has the contract for the concrete work. The line is being built to carry coal, timber and agricultural products. G. H. Tenbroek, president, and J. W. Jones, chief engineer, Cullman.

EASTERN INDIANA TRACTION.—Plans are being made to organize this company with a capital of \$1,000,000, to build from Union City, Ind., south to Cincinnati, Ohio. Residents of Richmond, Harrison, Ohio City, Liberty and Brookville are back of the project.

EPHRATA & LEBANON.—Organized in Pennsylvania to build from Ephrata, Pa., northwest, to Lebanon, 23 miles. All the

right-of-way has been secured. It is expected that it will cost about \$425,000 to build and equip the line. Residents of Schaefferstown are back of the project.

FARMINGTON, ALBUQUERQUE & GULF.—An officer writes that the plans call for a line from Farmington, N. Mex., southeast via Jemez Hot Springs to Albuquerque, 190 miles. It has not yet been decided when bids will be asked for the work. There will be a plate girder bridge, 1,000 ft. long and another 500 ft. long. The line will be built to carry coal, lumber, coke, fruit and agricultural products. F. B. Fergusson, president, Albuquerque. F. P. Hall, chief engineer, Farmington.

GENESEE & WYOMING.—See Halite & Northern.

GRAND TRUNK PACIFIC.—An officer is quoted as saying that the work to be undertaken this year calls for an expenditure of \$17,000,000. This includes 645 miles of branch lines, 265 miles of main track, 200 miles of grading and 140 station buildings. It is expected that the line from Tofield, Alb., to Calgary, will be finished this year—80 miles of track has been laid between Tofield and the Red Deer river, and 143 miles additional will be laid during the year. On the Battleford branch, 59 miles is to be built from Oban, Sask., north to Battleford, and the branch line from Melville, Sask., southwest to Regina, 68 miles, will be built. On a line from Bickerdike, on the main line, through the Pacific Pass coal fields, as well as those of Yellow Head, to be known as the Liberty coal branch, it is expected that 69 miles will be finished this year, and a branch will be built to the Mountain Park coal fields. In Saskatchewan 110 miles will be built from the Regina boundary branch, from Regina to a point south of Griffin, also between Regina and Moose Jaw, 49 miles. On the Prince Albert branch 72 miles is to be built; a contract for a 50 mile section between Biggar, Sask., and Calgary, Alb., has been let. A large amount of grading work along the Regina boundary will also be carried out. Foley, Welch & Stewart have contracts for work on the main line, also from Biggar, Sask., to Calgary, Alb., and nearly all branch work has been let to J. D. MacArthur, with the exception of the Moose Jaw branch, which has been let to Rigby & Hyland. Work is now under way on two large bridges over the Red Deer river on the Tofield-Calgary branch, to be 200 ft. high; another bridge west of Prairie Creek on the same line is to be built, also one over the Skeena river, which will be the largest bridge on the line.

HALITE & NORTHERN.—Application has been made to the New York Public Service Commission, Second district, for a certificate of convenience and necessity to build a line in the towns of Leicester and York in Livingston county, N. Y., 3.18 miles. The plans call for putting up a station. The line is to be leased to the Genesee & Wyoming. W. A. Hazard, E. W. Brown and A. Bigelow, New York, are incorporators. (December 9, p. 1129.)

ILLINOIS CENTRAL ELECTRIC.—An officer writes that the company will be ready to receive bids within 30 days for building an extension of 6.25 miles to Farrington, Ill. It is estimated that the work will cost \$100,000.

INDIANAPOLIS & DELPHI TRACTION.—An officer writes that contracts will probably be let within 90 days to build from Indianapolis, Ind., northwest via Carmel, Westfield, Sheridan, Burlington and Flora to Delphi, about 75 miles. Henry L. Smith, general manager, and H. A. Mansfield, chief engineer, Indianapolis. (March 17, p. 525.)

IOWA CITY—OTTUMWA INTERURBAN.—A contract is said to have been given to the Arnold Construction Company, Chicago, at \$2,196,000 for work on this line. The company, which was organized to build from Iowa City, Iowa, southwest to Ottumwa, 70 miles, has decided to build the first half of the line to Keota or Sigourney this coming summer, and the other half of the line to Ottumwa is to be built in 1912. F. Tanner, vice-president, Iowa City.

KANSAS CITY & MEMPHIS.—A contract has been given to the W. R. Felker Construction Company to build from Rogers, Ark., south to Fayetteville, about 30 miles. The line is to be extended east eventually to Memphis, Tenn. Col. W. R. Felker, former president of the company, will be in charge of the construction. G. D. Locke, president; R. G. Hobbs, secretary, and W. B. Felker, treasurer, Rogers, Ark. (December 23, p. 120.)

KANSAS CITY, MEXICO & ORIENT.—Announcement has been made by this company that the extension from San Angelo, Texas, to Mertzen, 28 miles, will be opened for traffic March 31. This will open a large stock shipping country. With that line in operation the main line of the Orient will be in operation between Wichita, Kan., and San Angelo, Texas, 510 miles, also between Marquez, Mexico, and Sanchez, 287 miles, and Fuerte and Topolobambo, 62 miles. The main line will eventually be 1,659 miles long.

KANSAS CITY SOUTHERN.—This company, which recently completed plans for extensive improvements to include track revision, grade reduction and general improvements to roadbed, as well as putting in heavier rail and other betterment work, is said to have given a contract to Porter Brothers, Seattle, Wash., for revision work between Kansas City, Mo., and Neosho. (February 17, p. 334.)

An officer is quoted as saying that the proceeds of a recent bond issue are to be used for the general rehabilitation of the line. The section from Shreveport, La., south to Beaumont, Texas, is to be relaid with heavier rail and a large general repair shop is to be built at Shreveport. Grading work will be continued from Kansas City, Mo., south.

KETTLE VALLEY LINES.—Work will soon be started, it is said, on a line through the Similkameen and Aspen Grove district, connecting with the Columbia branch at Midway, B. C. (March 10, p. 479.)

MEMPHIS, DALLAS & GULF.—An officer writes that this company has projected extensions to complete a through line from Memphis, Tenn., southwest to Fort Worth, Texas, with a branch from McLeod, Ark., north to Hot Springs. Contracts for grading most of the 45 miles from Murfreesboro, northeast to Arkadelphia, will be let in sections of from one to five miles each. The company will carry out the track laying work with its own men. There will be eight steel bridges, each 60 ft. long; eight each 100 ft. long, and one 200 ft. long, on this section. There will be about 16,000 cu. yds. of embankment work and 7,000 cu. yds. of excavation a mile.

MICHIGAN UNITED RAILWAYS.—Work has recently been finished by William E. Tench & Co., Detroit, Mich., contractors, on 30 miles of line between Lansing and Owosso.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—A grading contract is said to have been given to Dunavant & Co., Knoxville, Tenn., for work between Lookout Mountain, Tenn., and Wauhatchie. It is understood that the work will cost about \$250,000.

NATIONAL RAILWAYS OF MEXICO.—An officer writes that the company has started work on the line from Canitas, Zacatecas, Mex., west to Durango, in the state of Durango. Contracts for the grading and bridge work were let in the general contract to the Campania Constructora de Ferrocarriles for work on 100 miles, and contracts for the remaining section to complete the line will be let by April 15. Maximum grades eastbound will be 3 per cent., and westbound 1.2 per cent. There will be two steel bridges, each 250 ft. long, and two each 150 ft. long. The line, which is being built to carry ore, lumber and wheat, was first projected from Gutierrez, Zacatecas to Durango, and afterwards changed to connect with the old Central Line at Canitas. (March 17, p. 526.)

This company is said to be assembling large quantities of material at Tamos, Vera Cruz, which is 25 miles west of Tampico, preparatory to resuming construction work on the Tampico—City of Mexico short line, on which work was started by the Mexican Central about five years ago. Grading had been finished and track laid on 25 miles at the time work was suspended. It is said that the new line will be 270 miles shorter than the existing line between Tampico and the City of Mexico. Surveys have been made from Tamos, south through Ozuama to a point within 24 miles of the port of Tuxpam, thence east to that place. From the point where the line diverges to Tuxpam, the main line will continue southwest to Anita, Hidalgo, where connection is to be made with the existing line to the City of Mexico. From Tuxpam a branch is to be built southeast, following the coast of the gulf of Mexico to a connection with the existing line at Salmoral. This branch will pass through the gulfport of Nautla, at present undeveloped, where it is understood the government has adopted plans for extensive harbor and port improvements.

NEVADA ROADS.—The Yellow Pine Lumber Company is building a narrow gage line from Goodsprings, Nev., to Yellow Pine, eight miles.

OKLAHOMA & GOLDEN CITY.—A contract has been given to W. Love, Indianapolis, Ind., it is said, to build this line. The first station to be built will be from Golden City, Mo., northeast to Stockton, about 30 miles. The plans call for extensions southwest to Oklahoma and northeast into central Missouri. The general offices of the company are at Golden City.

OREGON SHORT LINE.—An officer writes regarding the reports that a number of short lines are to be built in the Brigham City district, Utah, that the company is now negotiating for the right-of-way, but the proposition is in an indefinite state at the present time, and definite plans have not yet been made. If any work is to be carried out in that section it will consist of short spurs into the fruit producing sections to facilitate the handling of the crop and assembling it in trainload lots at Brigham station.

According to press reports, bids are being asked for double-tracking work on 22 miles between Farmington, Utah, and Ogden; also for seven miles both east and west from Montpelier, Idaho. Contracts are to be let soon and the work will probably be under way early in April. It is estimated that the improvements will cost about \$1,000,000.

PACIFIC & PEACE RIVER.—The bill incorporating this company has not yet been passed. The plans call for a line from Bella Coola, B. C., north via Fort Fraser, Port St. James, Fort Lac-lede and Pine River Pass to Dunvegan, on Peace river, 480 miles. The line is to be built to carry wheat, timber, live stock, ores and general merchandise. J. A. Ritchie, Ottawa, Ont., is the solicitor.

PANAMA-DAVID.—Bids are wanted until June 30, 1911, by the Minister of Public Works of the Republic of Panama, for building the line from the city of Panama, west to David, about 361 miles, with branches to the province of Los Santos and the town of Anton. Copy of the announcement can be secured from the Bureau of Manufactures, Washington, D. C. (March 10, p. 479.)

PERE MARQUETTE.—A contract has been given to W. E. Tench & Co., Detroit, Mich., for 40 miles of double-tracking work between Detroit and Toledo, Ohio. A large force of men and teams will be put to work at once, between Romulus, Mich., and Alexis, Ohio.

QUEBEC & SAGUENAY.—Construction is to be begun next month and completed this year. The contract has been let to M. J. O'Brien, of Ottawa. The road will run from St. Joachim, Quebec, to Murray Bay, along the north shore of the St. Lawrence.

RICHMOND, MAGOG & STANSTEAD.—An incorporator writes that the plans call for building a line from Rock Island, Que., and Derby Line, Vt., on the United States border, north 50 miles, via Smiths Falls, Fitch Bay and Georgeville, thence along the shore of Lake Memphremagog to Magog, then through heavy timber lands for about 20 miles to Kingsboro and via Melbourne, to Richmond. The line will be built through a rich mining district. The company expects to have about 25 miles finished this coming summer. R. H. Fletcher, general manager of the Fletcher Pulp & Lumber Company, Sherbrooke, may be addressed. (February 17, p. 334.)

SPRINGDALE & LONG LAKE.—Application has been made for a charter in Oregon to build from Springdale, Stevens county, Wash., northwesterly to a point four miles west of Kerby, Spokane county, on the Spokane river, 23 miles. It is expected that construction work will be started soon. The headquarters of the company are at Portland, Ore. F. T. Griffith, F. J. Lonergan and J. F. Phelan, are incorporators.

UNION PACIFIC.—This company will start train service over the new line between Denver, Colo., and Ft. Collins within 90 days, it is said. The Ft. Collins branch, 66 miles long, will cost \$2,500,000, including \$500,000 for terminals. The construction of the line is estimated at \$25,000 a mile.

WISCONSIN & NORTHERN.—Surveyors are now at work on the extension to be built from Shawano, Wis., south to Appleton, about 40 miles. Nearly all the right-of-way has been bought. (November 11, p. 942.)

Railway Financial News.

ATCHISON, TOPEKA & SANTA FE.—The Paris correspondent of the *Journal of Commerce* says "on excellent authority" that negotiations for listing Atchison, Topeka & Santa Fe receipts for stock on the Parquet of the Paris Bourse have made active progress during the last few days.

BOSTON & MAINE.—The absorption by the Maine Central of three subsidiary lines—the Somerset, the Washington County and the Seabaticook & Moosehead has been approved by the Maine legislature.

CANADIAN NORTHERN.—Last week the remaining £358,888 (\$1,794,440) of an issue of £1,622,586 (\$8,112,930) 3½ per cent. guaranteed first mortgage debenture stock of the Canadian Northern was offered in London at 94½. There was offered at the same time and at the same price the entire issue of £647,260 (\$3,236,300) 3½ per cent. first mortgage debenture stock of the Canadian Northern Alberta. Both stocks are guaranteed principal and interest by the government of the Dominion of Canada.

CHESAPEAKE & OHIO.—Directors have asked the stockholders to vote at a special meeting on April 29 on the question of making a new mortgage to secure \$125,000,000 5 per cent. 20-year bonds, of which sufficient bonds are to be reserved to retire the outstanding \$11,000,000 general funding and improvement bonds, due during the life of the new bonds; the remainder of the new issue to be available for new construction, improvements and the acquisition of new lines. The outstanding convertible bonds, it is understood, will have an equal lien on the Chesapeake & Ohio property with the new bonds, but new bonds will have in addition a lien on the property acquired by the Chesapeake & Ohio since the convertible bonds were issued. This includes the controlling stock of the Hocking Valley and the securities of the Chesapeake & Ohio of Indiana (the Chicago line).

CHICAGO & NORTH WESTERN.—The \$2,977,500 Madison extension first mortgage 7 per cent. bonds, maturing April 1, 1911, are to be paid in cash on presentation.

DETROIT, TOLEDO & IRONTON.—The New York Trust Company mortgage trustee and the protective committee of the general lien bonds, Otto T. Bannard, chairman, have told the United States circuit court that they were dissatisfied with the operation of the D. T. & I. by three receivers, and asked that Thomas Rhodes be made sole receiver.

GEORGIA RAILROAD & BANKING.—A quarterly dividend of 3 per cent. has been declared on the \$4,200,000 stock, payable April 15. This compares with 2¾ per cent. paid quarterly since 1888, and puts the stock on an annual dividend basis of 12 per cent. as compared with 11 per cent., the annual rate heretofore.

GRAND TRUNK WESTERN.—The Michigan State Railroad Commission has given authority to the company to make a new mortgage for \$40,000,000 to extend and improve the road and provide for the purchase of the Pontiac, Oxford & Northern, which has been controlled by the Grand Trunk.

GREEN BAY & WESTERN.—The calendar year 1910 of this company, which operates 239 miles of railway between Green Bay, Wis., and La Crosse, shows total operating revenue amounting to \$659,561. Operating expenses last year amounted to \$441,115; and after the payment of taxes and operating expenses, the company had an operating income of \$177,100. Dividends of 5 per cent. were paid on the \$600,000 debenture A's, and 5 per cent. on \$2,500,000 stock, and half of 1 per cent. on \$7,000,000 debenture B's, calling for a total of \$190,000. The company ended the year 1909 with a surplus of \$107,075, so that after the payment of dividends in 1910 the surplus was \$94,174.

KANSAS CITY SOUTHERN.—The New York Stock Exchange has listed the \$5,000,000 additional refunding and improvement mortgage 5 per cent. bonds, due 1950, which were recently sold by the company. Of the proceeds of these bonds \$2,500,000 was spent for the removal of the district terminal from Stillwell,

Okla.; \$2,500,000 for reduction of grade and for additional equipment, and \$2,250,000 for heavier rail, ballasting, etc.

LAKE SHORE & MICHIGAN SOUTHERN.—The one year notes of this company, largely held in France, amounting to 44,000,000 francs, and due March 15, have been retired by the issue of new notes due March 4, 1912, which have been sold through J. P. Morgan & Co. The new notes aggregate 60,000,000 francs, and the balance (16,000,000 francs—\$3,200,000) not required for refunding will be used for improvements.

MACON, DUBLIN & SAVANNAH.—This company asked the Georgia railway commission for authority to issue \$225,000 first mortgage bonds for new construction and improvements.

NEW YORK CENTRAL & HUDSON RIVER.—See Lake Shore & Michigan Southern.

NEW YORK, NEW HAVEN & HARTFORD.—President Mellen has given out the following statement:

"The New York, New Haven & Hartford has not bought, nor sought to buy, the Boston & Albany, and has no control over its operations.

"The New Haven, however, has entered into arrangements with the New York Central looking to an increased traffic by way of Boston & Albany junctions, and will probably, in the near future, perfect arrangements by which it will run its own trains with its own power over portions of the Boston & Albany lines, notably between South Framingham and Boston, between Ashland and South Framingham, between Ludlow and Springfield in connection with the projected Hampden Railroad extension of the Central Massachusetts division, and between Pittsfield and North Adams.

"These arrangements are so obviously in the public interest, it is unnecessary to enlarge upon beneficial results that are bound to follow."

PENNSYLVANIA RAILROAD.—Stockholders have voted to authorize the directors to increase the capital stock from \$500,000,000 to \$600,000,000; and, as was previously announced, the directors will issue in the near future \$40,000,000 stock, \$18,000,000 of which will be new stock and \$22,000,000 authorized stock in the treasury.

PONTIAC, OXFORD & NORTHERN.—See Grand Trunk Western.

SOUTHERN.—Potter, Choate & Prentice, White, Weld & Co., and Kissel, Kinnicut & Co. are offering on a 4½ per cent. basis the balance of \$2,000,000 first consolidated 5 per cent. bonds of the Southern Railway, maturing in 1994. This is the last block of this issue which the railway can sell except to retire underlying securities. Future financing will probably be arranged through sales of the development and general mortgage bonds.

The New York Stock Exchange has listed \$1,500,000 additional first consolidated mortgage bonds, which were issued to retire a like amount of underlying bonds.

ST. LOUIS & SAN FRANCISCO.—Of a bond issue of \$85,000,000 in 1901, \$67,719,000 bonds have been certified by the trustee, but of that amount the Trust company was to hold \$51,540,000 to retire two underlying issues. The railway company has found that \$1,997,000 underlying bonds will not become due until the new bonds have all matured, and therefore asks the Trust company to release \$1,997,000 of the new bonds to be used for other purposes by the railway. An order of the Appellate division of the supreme court has been asked for.

WABASH-PITTSBURGH TERMINAL.—The Wabash Railroad has sold the remaining \$3,218,000 Wabash-Pittsburgh Terminal bonds which it held. Originally the Wabash bought \$6,600,000 of these bonds from the Terminal company, but it is claimed that the only payment that was made was a payment to the Wabash-Toledo syndicate. The money received from the present sale of bonds by the Wabash will have to be deposited in place of the Terminal company bonds, which were part of the collateral securing a loan.

WABASH RAILROAD.—See Wabash-Pittsburgh Terminal.

A line is proposed to run from Techou, China, to Chengting, to connect the Peking-Hankow and the Shantung lines when the northern section of the Tientsin Pukow Railway has been completed.

Supply Trade Section.

Victor W. Ellet, general foreman of the Chicago, Rock Island & Pacific, at Rock Island, Ill., has resigned to go to the Hunt-Spiller Manufacturing Corporation, Boston, Mass.

The Isthmian Canal Commission will receive bids until April 14, on miscellaneous supplies, including dynamite, blasting caps, detonators, safety fuse, insulating tape, etc. Circular No. 626.

Owen Leibert, who helped develop the Bessemer steel process with John Fritz and several others, died at his home in Bethlehem, Pa., on March 26. Mr. Leibert was with the Bethlehem Steel Company, South Bethlehem, Pa., for 38 years, resigning as chief engineer in 1891.

E. J. Caldwell, for 12 years with the Illinois Central, and for six years private secretary to the president, has accepted a position with the Barrett Manufacturing Company, Chicago, as railway representative, with office at Chicago. This position was created by the company especially for Mr. Caldwell.

Seely Dunn of New Orleans, La., has been appointed sales agent of the Bullard Car Door Equipment Company, Birmingham, Ala., and will represent that company throughout the country in introducing its fixtures for freight car doors. Mr. Dunn was for several years a division superintendent on the Louisville & Nashville; later connected with several railways in the West, and subsequently became manager of the Southern Car Service Association at New Orleans.

The Allen & Garcia Co., McCormick building, Chicago, has been incorporated by Andrews Allen and John A. Garcia. The company will specialize in steel, concrete and timber structures, including coal tipples, bank-heads, coal storage, screening and power plants, bridges and foundations and drawbridges. Mr. Allen is a graduate of the University of Wisconsin, class of 1891, where he took the degree of C. E. in 1895. For the last ten years he has specialized in the design and construction of coal mining, screening and storage plants. Mr. Garcia is a graduate of the St. Louis University, class of 1896, and received the degree of mining engineer at the University of Missouri School of Mines in 1900. Since entering professional work he has been employed in developing mining properties and in the construction of mining plants.

The 1911 M. M. and M. C. B. Convention.

The total number of square feet of exhibit space to be occupied at this year's Atlantic City convention of the American Railway Master Mechanics' and Master Car Builders' Associations is 76,000, or 5,000 sq. ft. more than in 1910; and all of this space has been taken.

The Railway Supply Manufacturers' Association, J. D. Conway, Oliver building, Pittsburgh, Pa., secretary, will issue circular No. 2 on or about May 1, which circular will give full particulars about the concerns designated by the association to provide furniture for the booths, floral decorations, special electric work and shipping instructions, and such other details as the exhibitors will need to complete their arrangements.

TRADE PUBLICATIONS.

Motor Drive.—The General Electric Company, Schenectady, N. Y., has published a 25-page illustrated booklet setting forth the advantages of the motor drive for metal working machinery.

Air Tools.—The Independent Pneumatic Tool Company, Chicago, has recently issued circular N, describing Thor air tools, their uses and advantages. The capacities of Thor drills, pneumatic grinders, reversible wood-boring machines and pneumatic hammers are given in detail.

Headlights.—The Lacy Headlight Company, Houston, Texas, has published a small booklet on the Anderson-Lacy electric headlight. The descriptions of the lamp, the dynamos and the turbine are clear and concise, and a diagram is included to supplement these descriptions.

Boiler Room Tactics.—The Heine Safety Boiler Co., St. Louis, Mo., in a small pamphlet gives a complete set of rules for caring for boilers and superheaters. A full description of the Heine boiler is also included, for the first rule for caring for any boiler is to be thoroughly familiar with its construction.

RAILWAY STRUCTURES.

BLOOMINGTON, IND.—The Chicago, Indianapolis & Louisville has submitted plans for a new passenger station and freight depot to the local commercial club. The plans call for a station of stone with a tile roof. It will be 105 ft. x 30 ft., and is estimated to cost \$100,000.

BONNERS FERRY, IDAHO.—The Kootenai Valley Railway has prepared plans for a new steel bridge over the Kootenai river. The bridge will be 800 ft. long and will replace a wooden structure that has been standing for about 12 years.

CAMPBELLTON, N. B.—An officer of the Intercolonial writes that the proposed new station will be of red brick with pressed brick and stone trimmings, on concrete foundations, 32 ft. wide, with the main building 112 ft. long, and wings at each end of 44½ ft., making a total length of 201 ft. Contracts were let March 25, and work is expected to be started about May 1. The offices for the division headquarters will be located in the second floor of the building.

CLEVELAND, OHIO.—The Pennsylvania Railroad has let a contract for an ore unloading plant on the lake front to consist of four 17-ton unloaders and a 15-ton ore-bridge.

COUNCIL BLUFFS, IOWA.—The Chicago, Rock Island & Pacific freight house was burned on March 23. The loss included the contents of the building and 12 loaded cars standing on an adjacent track.

EDMONTON, ALB.—The Canadian Northern will spend \$140,000, it is said, on yard improvements at Edmonton, to include a roundhouse to cost \$40,000.

The Canadian Northern will ask for bids soon, it is said, for building a bridge on the main line west of Edmonton, to cost \$250,000.

GRAHAM STATION, ONT.—The Canadian Pacific is to receive bids at an early date for building a concrete trestle about 500 ft. long.

GREENWICH, N. Y.—An officer of the Greenwich & Johnsonville is quoted as saying that improvements will be made at a cost of \$30,000. The work includes putting up a passenger station, a freight house and improving the freight handling facilities in the yards at Greenwich.

HINTONBURG, ONT.—The Canadian Pacific will build a 16-stall roundhouse estimated to cost \$60,000. The building will be of reinforced concrete with fireproof roof. Work will begin at an early date.

MEMPHIS, TENN.—Plans are being made by the Illinois Central for putting up a new passenger station at Memphis. An officer writes, however, that bids have not yet been asked for the work.

MISSOURI VALLEY, IOWA.—The Chicago & North Western shops are to be enlarged during the coming summer at an estimated cost of about \$300,000.

MURRAY, UTAH.—The Oregon Short Line has completed plans for a new passenger station. It is announced that work will be begun within 90 days. The site is south of the present station on an extension of Fifth avenue. The building is to cost between \$11,000 and \$12,000.

OAKLAND, CAL.—Plans are being made by Jarvis Hunt, a Chicago architect, it is said, for a new station for the Southern Pacific at Oakland. The estimated cost of the building is \$250,000.

RED DEER, ALB.—The contract for a steel bridge over the Red river, for the Alberta Central, has been given to Goolie & Jackson, Montreal, Que., and a contract for a bridge over the Saskatchewan river has been given to Armstrong & Son, Red Deer, Alb.

SHREVEPORT, LA.—See Kansas City Southern under Railway Construction.

SOUTH FORK, B. C.—The Canadian Pacific has let a contract to Digby & Grenier, Fernie, B. C., for building a bridge over the Old Man river. The bridge will be 860 ft. long, 137 ft. high, and will require 1,000 yds. of concrete, 500 piles and 2,000 yds. of excavation.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

The Missouri, Kansas & Texas is said to be in the market for 16 locomotives.

The Georgia Railroad has ordered 6 ten-wheel locomotives from the Baldwin Locomotive Works. The dimensions of the cylinders will be 20 in. x 24 in., the diameter of the driving wheels will be 66 in., and the total weight in working order will be 173,000 lbs.

The Illinois Central has ordered 5 Pacific type locomotives from the American Locomotive Company. The dimensions of the cylinders will be 25 in. x 26 in., the diameter of the driving wheels will be 75 in., and the total weight in working order will be 239,000 lbs. These locomotives will be equipped with superheaters.

The Delaware, Lackawanna & Western, as mentioned in the Railway Age Gazette of March 10, has ordered 35 locomotives from the American Locomotive Company. The dimensions and special equipment of these locomotives will be as follows:

Dimensions.		
Type	Consolidation	Mogul
Number ordered	15	7
Gage	4 ft. 8½ in.	4 ft. 8½ in.
Simple or compound	Simple	Simple
Weight on drivers	206,000 lbs.	150,500 lbs.
Total weight	233,000 lbs.	171,500 lbs.
Cylinders	26 in. x 30 in.	20½ in. x 26 in.
Diameter of drivers	57 in.	63 in.
Type of boiler	Straight top type	Straight top type
Working steam pressure	170 lbs.	200 lbs.
Heating surface, tubes	3,523 sq. ft.	2,148 sq. ft.
Heating surface, firebox	205 sq. ft.	209 sq. ft.
Heating surface, total	3,728 sq. ft.	2,358 sq. ft.
Tubes, number	446	304
Tubes, outside diameter	2 in.	2 in.
Tubes, length	15 ft. 2 in.	13 ft. 6 in.
Firebox, type	Semi-wide	Semi-wide
Firebox, length	9 ft. 3 in.	8 ft. 6 in.
Firebox, width	6 ft. 3 in.	6 ft. 3 in.
Firebox, material and maker	Worth Bros.	Worth Bros.
Grate area	58 sq. ft.	53.4 sq. ft.
Tank capacity for water	8,000 gals.	6,500 gals.
Coal capacity	14 tons	10 tons
Type	American	Six-wheel Switching
Number ordered	6	7
Gage	4 ft. 8½ in.	4 ft. 8½ in.
Simple or compound	Simple	Simple
Weight on drivers	104,500 lbs.	133,000 lbs.
Total weight	156,000 lbs.	133,000 lbs.
Cylinders	20 in. x 26 in.	19 in. x 24 in.
Diameter of drivers	69 in.	51 in.
Type of boiler	Straight top type	Straight top type
Working steam pressure	185 lbs.	180 lbs.
Heating surface, tubes	1,961 sq. ft.	1,690 sq. ft.
Heating surface, firebox	179 sq. ft.	164 sq. ft.
Heating surface, total	2,140 sq. ft.	1,854 sq. ft.
Tubes, number	280	269
Tubes, outside diameter	2 in.	2 in.
Tubes, length	13 ft. 4½ in.	12 ft.
Firebox, type	Wide	Semi-wide
Firebox, length	10 ft. 6 in.	7 ft. 6 in.
Firebox, width	8 ft. 4 in.	6 ft. 3 in.
Firebox, material and maker	Worth Bros.	Worth Bros.
Grate area	87.6 sq. ft.	46.3 sq. ft.
Tank capacity for water	5,500 gals.	3,300 gals.
Coal capacity	10 tons	6 tons

Special Equipment.

Axles	Cambria steel.
Bell ringer	Gollmar.
Boiler lagging	Sectional magnesia.
Brakes	Westinghouse—American—Schedule—E—T—6
Brake beams	Westinghouse.
Brake shoes	Improved Perfecto type on drivers.
Brick arch	None.
Couplers	Sharon.
Driving boxes	Cast steel.
Headlight	Dressel.
Injector	Hancock composite.
Journal bearings	Magnus bearing.
Piston and valve rod packings	United States.
Safety valve	Consolidated.
Sanding devices	Leach air and hand sander.
Sight-feed lubricators	Nathan.
Springs	Cast steel, D. L. & W. specification.
Staying	Tate flexible bolts in breaking zone.
Steam gages	Ashcroft.
Tires	¾ thick Latrobe flanged tires, all 5½ wide.
Tubes	No. 11 B. W. G. spellerized steel.
Valve gear	Stephenson on American and switching locomotives.
Valve gear	Walschaert on mogul and consolidation locomotives.
Wheel centers	Cast steel.

CAR BUILDING.

The Chicago, Burlington & Quincy is in the market for 1,000 all steel gondola cars.

The Richmond, Fredericksburg & Potomac is said to be in the market for 4 passenger cars.

The Bingham & Garfield has ordered 120 sixty-ton dump cars from the Pressed Steel Car Company.

The Minnesota, Dakota & Western has ordered 50 flat cars from the Haskell & Barker Car Company.

The Chino Copper Company is said to be in the market for 50 hopper cars. This item is not confirmed.

The Atchison, Topeka & Santa Fe is said to have ordered 20 coaches from the Pullman Company. This item is not confirmed.

The Chicago, Rock Island & Pacific has ordered 11 seventy-foot all steel combination cars and 30 sixty-foot all steel postal cars from the Pullman Company.

The Bethlehem Steel Company, South Bethlehem, Pa., has ordered 100 fifty-ton steel coke cars from the American Car & Foundry Company, to be built at the Berwick, Pa., plant.

The Pittsburgh & Lake Erie mentioned in an unconfirmed item in the Railway Age Gazette of March 24 as being in the market for 1,000 gondola cars and 1,000 hopper cars, is in the market for this equipment.

The Pennsylvania Equipment Company, mentioned in the Railway Age Gazette of February 24 as being in the market for freight cars, is in the market for a number of 30-ton box cars, some 70-ft. vestibule passenger cars and some 36-ft. cabooses.

The Western Maryland, mentioned in an unconfirmed item in the Railway Age Gazette of March 24 as having ordered 15 vestibule passenger cars, 4 mail and express cars, 2 combination cars and 2 baggage cars from the Barney & Smith Car Company, has ordered this equipment from this company.

IRON AND STEEL.

The Missouri, Kansas & Texas is said to be in the market for 14,000 tons of rails.

The Havana Electric has ordered 2,000 tons of rails from the Lorain Steel Company.

The Pan-American of Uruguay is said to be in the market for 4,500 tons of rails.

The Lehigh & New England has ordered 4,000 tons of rails from the Bethlehem Steel Company.

The Harriman Lines are said to have ordered 1,200 tons of rails from the Pennsylvania Steel Company.

The Central of New Jersey is said to have ordered 2,500 tons of structural steel from the American Bridge Company.

The Western Maryland is said to have ordered 6,550 tons of rails from the Bethlehem Steel Company and 4,050 tons of rails from the Pennsylvania Steel Company.

General Conditions in Steel.—Orders have fallen off between 10 and 15 per cent. with the approach of the Supreme Court decisions in the Oil and Tobacco cases. Production, however, has increased. The Steel Corporation is now operating at 73 per cent. of its capacity, and the Bethlehem Steel Company is operating at its full capacity for the first time in two years. The increase in structural steel orders for other than railway use has been very large. While the buying of the railways is exceptionally low, some large inquiries are expected next week. The average daily orders of the United States Steel Corporation for March are expected to be between 37,000 and 40,000 tons.

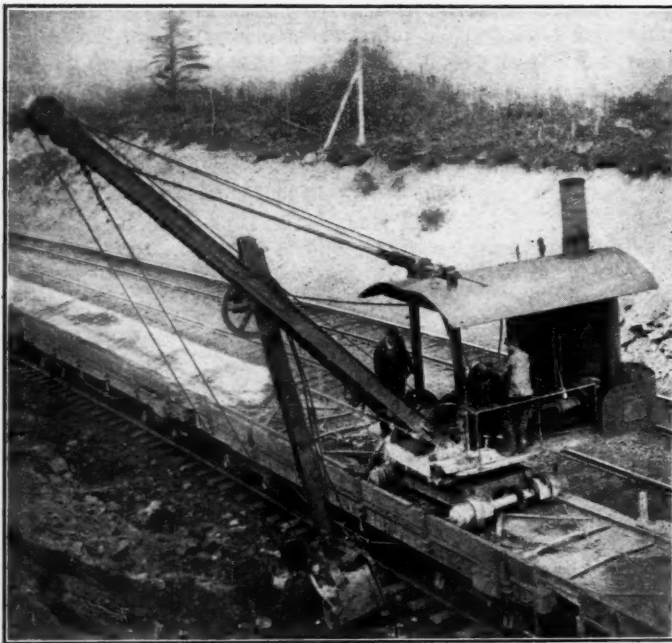
SIGNALING.

The Grand Trunk Western, which is the Michigan section of the main line of the Grand Trunk Railway, in applying to the state railroad commission of Michigan for authority to issue new bonds, includes in the proposed expenditures from the proceeds of the bonds an item of \$850,000 for the installation of block signals.

Browning Railway Ditcher.

During the past year a new machine, known as the Browning railway ditcher, has been introduced by the Browning Engineering Company of Cleveland, Ohio. It is a revolving steam shovel used in widening cuts, opening ditches, and for light gravel pit work or for handling rails and ties. It was originally intended to be used on the top of a flat car, loading material on the car, but by means of a portable track it may be moved from car to car loading a whole train of flat cars. The portable track consists of two sections, lightly but securely tied together, which may be handled with a chain-sling by the ditcher itself. The ditcher was developed to meet the need of a machine to open drainage ditches on either side of the roadbed and works on either side of the cars, loading them behind as it travels toward the locomotive.

The traveling base of the ditcher is a single casting, mounted on hammered steel axles and steel wheels. The axles extend through the wheels far enough to provide means for securing the machine to the car during transit. It is propelled by a horizontal shaft driven by a vertical shaft through the center pin by means of bevel gears. On top of the base casting is fastened the steel rotating gear, on which the rotating base rests. The pinion which meshes with a gear fastened on the top of the traveling base is carried on the lower end of a vertical shaft,

**Browning Railway Ditcher.**

whose journal is a cast iron sleeve set in the rotating base. When desired, this sleeve, with the shaft and pinion, may be removed without disturbing the other machinery. All motions, except raising and lowering the boom, are controlled by the Browning patent steel friction clutches, which require little attention if they are kept well oiled. Double clutches are provided for both the traveling and the rotating motion, so that it is not necessary to reverse the engine while operating. The boom hoist drum is controlled by a combination wood V friction and ratchet, with an independent brake hand to allow for rapid hoisting and lowering of the boom for changing radii and handling track sections. The main hoist and backing-up drums are independently driven, each being controlled by a large brake wheel operated by a foot lever. The clutches and reverse link motion are controlled by a set of levers located near the front and on one side of the rotating base where they are convenient to the operator and allow him to have the necessary view of his work. The vertical boiler, 42 in. in diameter, has 84 two-in. drawn steel tubes and is jacketed with asbestos and galvanized steel. A water tank, having 350 gal. capacity, is located near the boiler, using short piping, which eliminates the danger of freezing in cold weather. The engine cylinders are 8 in. in diameter and have an 8 in. stroke. The operator and machinery are protected by a steel canopy of ample size and when

desired a complete steel house can be furnished. The boom is built up of plates and angles, and is usually 25 ft. long. The dipper is made of steel plates and holds about three-quarters of a cubic yard of material. The complete machine, with a half tank of water, two gages of water in the boiler, a half ton of coal, a dipper full of dirt and one operator, will weigh approximately 45,000 lbs.

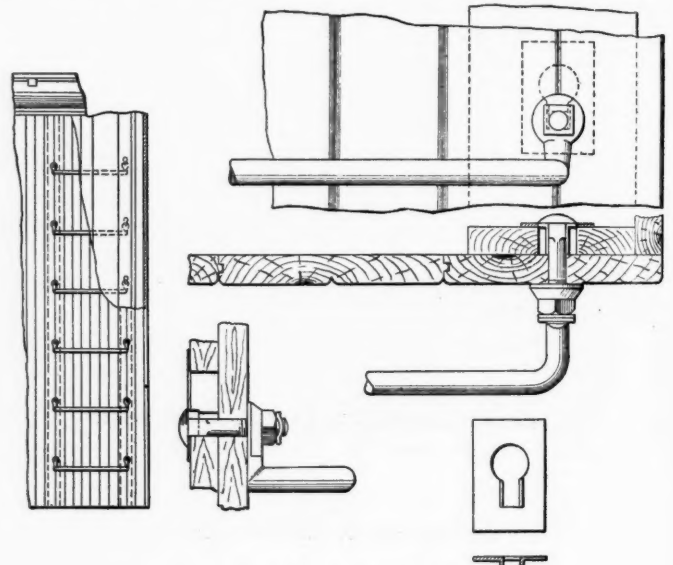
When desired, the dipper may be converted into a locomotive crane for handling rails and ties, by removing the dipper and the dipper stick and using a hook on the end of the hoisting rope. On a standard gage track without track clamps or locking, the machine will lift the following maximum loads:

On 10-ft. radius.....	15,000 lbs.
On 20-ft. radius.....	9,000 lbs.
On 30-ft. radius.....	5,000 lbs.

By using both the hoisting and backing drums, a clam shell, orange peel or scraper bucket may be used. A pile-driving attachment with a 2,000-lb. hammer which will drive an 18-in. pile at 17 ft. from the center of the machine may also be used. This machine is being used by the Erie, Lehigh Valley, San Pedro, Los Angeles & Salt Lake, the Longville Lumber Company and other large lumber interests. Its details and uses are well described and illustrated in a booklet recently issued by the Browning Company.

Bolt Lock for Ladders on Freight Cars.

A new and ingenious method of securely fastening ladders to freight cars is shown on the accompanying illustration. It is accomplished by the use of the Monogram bolt lock, which is made by the Grip Nut Company, Chicago. This bolt lock may be applied by taking off a few boards of the outside sheathing; it holds the shanks of the short carriage bolts used to fasten the ladder to the car. It is so arranged that the same sheathing

**Monogram Bolt Lock for Car Ladders.**

boards may be reapplied, the bolt lock being fastened to a strip laid directly inside the sheathing. This arrangement is supplied from the outside of the car, thus making no difference whether it is loaded or empty, and making it of special value on refrigerator and other lined cars where it is undesirable to use long through bolts which would interfere with the proper application of the insulation. It also gives a secure ladder as required by the safety appliances laws, and is an improvement over the insecure ladders fastened by common lag screws.

In German East Africa the Central Railway, which will extend from the coast at Dar-es-Salam west by north to Lake Tanganyika at Ujiji, has reached Saranda, 237 miles from the coast. This place is on the western side of "the Rift," the great depression which extends from Lake Nyassa north, between which and Tanganyika and Victoria there is a high plateau. From Sananda to Tabora the distance is 170 miles, and this is as far as the railway has been surveyed. Thence to Ujiji is about 200 miles.